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WHEREAS, the Annual Convention of the Wire Association in Philadelphia in October has been called the finest, the most important and the most beneficial yet held, and

WHEREAS, the October Convention Number of Wire and Wire Products played an important part in and contributed much to making the Convention a success.

NOW THEREFORE, be it resolved by the Publishers of Wire and Wire Products that they set their hands, heads and hearts to the issuance of a Post-Convention number in January that shall do credit to that great event.

Done this Fifth Day of November, in the Year One Thousand Nine Hundred and Forty-one.

Wire & Wire Products
OFFICIAL ORGAN OF THE WIRE ASSOCIATION

The January Issue Will Contain:

The Mordica Memorial Lecture, an outstanding feature of the Convention delivered annually in commemoration of the late John Mordica, first president and one of the founders of the Wire Association.

Copies of the recorded discussions of the papers presented at the technical sessions of the Wire Association.

A list of persons attending the Annual Convention.

News of the outstanding personalities of the field.

Advertisers, please note!
THIS IS OUR ONLY OTHER SPECIAL ISSUE. It is read and studied by the entire field — both those who attended and those who were not present at the Convention. This January Post Convention Number offers great advertising value. Every concern with products, equipment, supplies or services bought by the Wire Industry should be represented in it. It is a honey of an advertising medium. We invite you to make space reservations. Please send them today, now, while you have this reminder before you.

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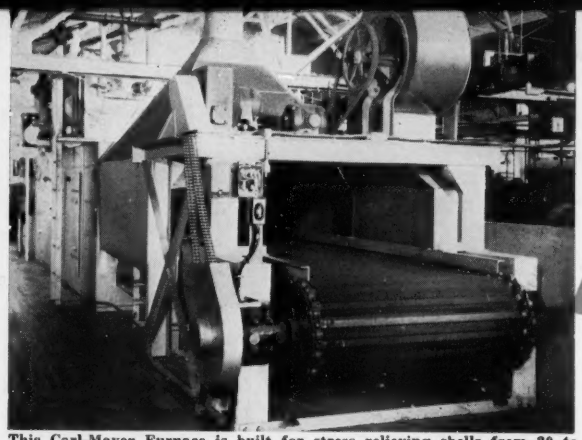

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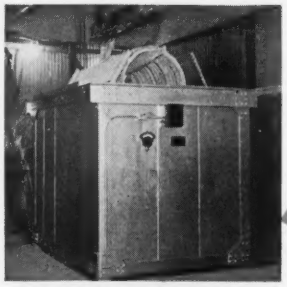

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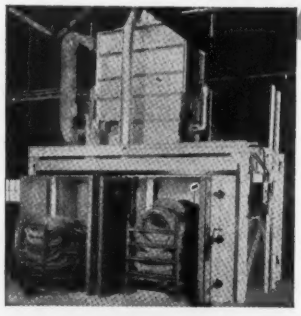

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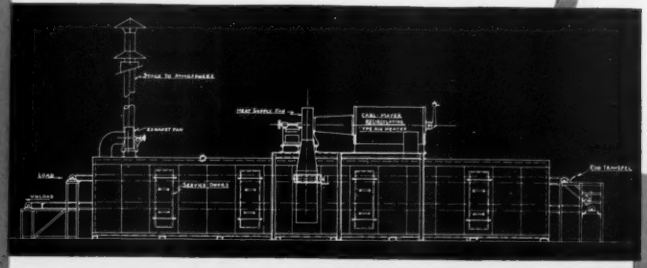

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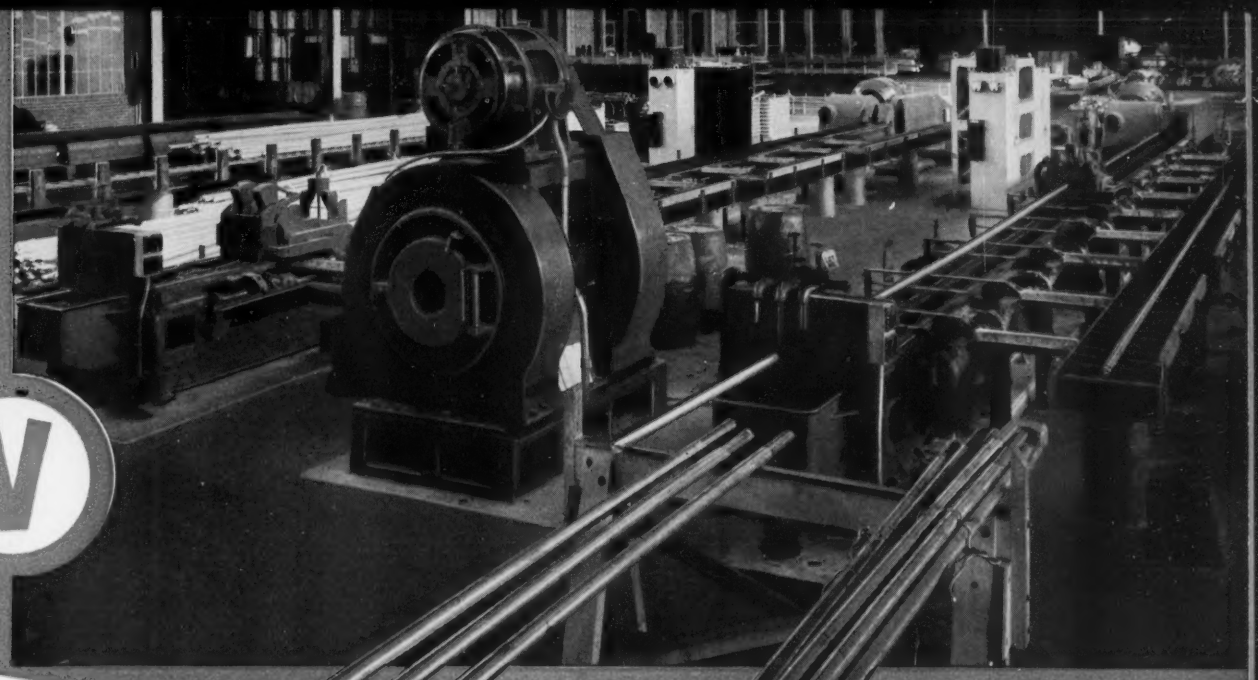

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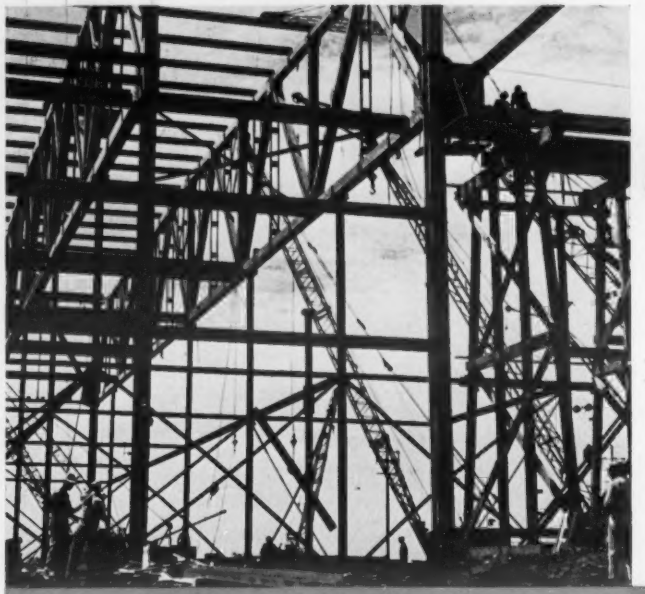

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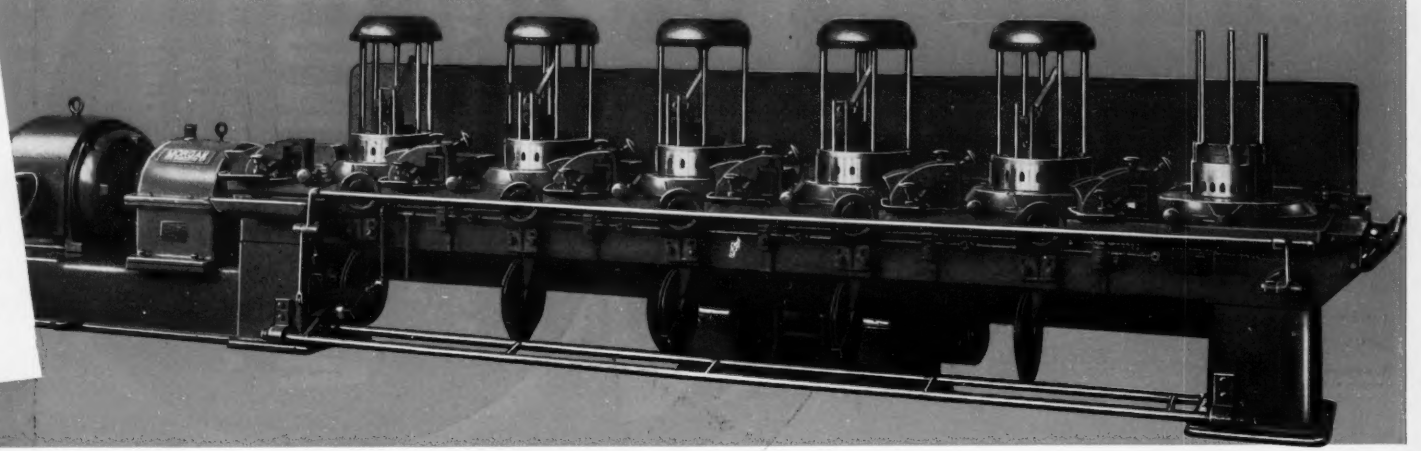

WIRE AND WIRE PRODUCTS

A monthly publication devoted to the production of Wire, Rod and Strip, Wire and Rod Products and Insulated Wire and Cable

DRAWING—ROLLING—EXTRUDING—FORMING—FABRICATING

Vol. 16 DECEMBER, 1941 No. 12

Designated as

Official Publication By The Wire Association

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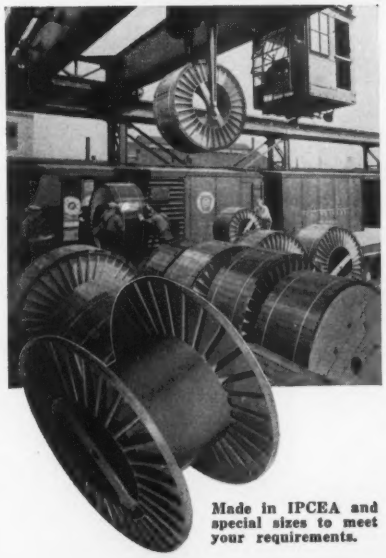

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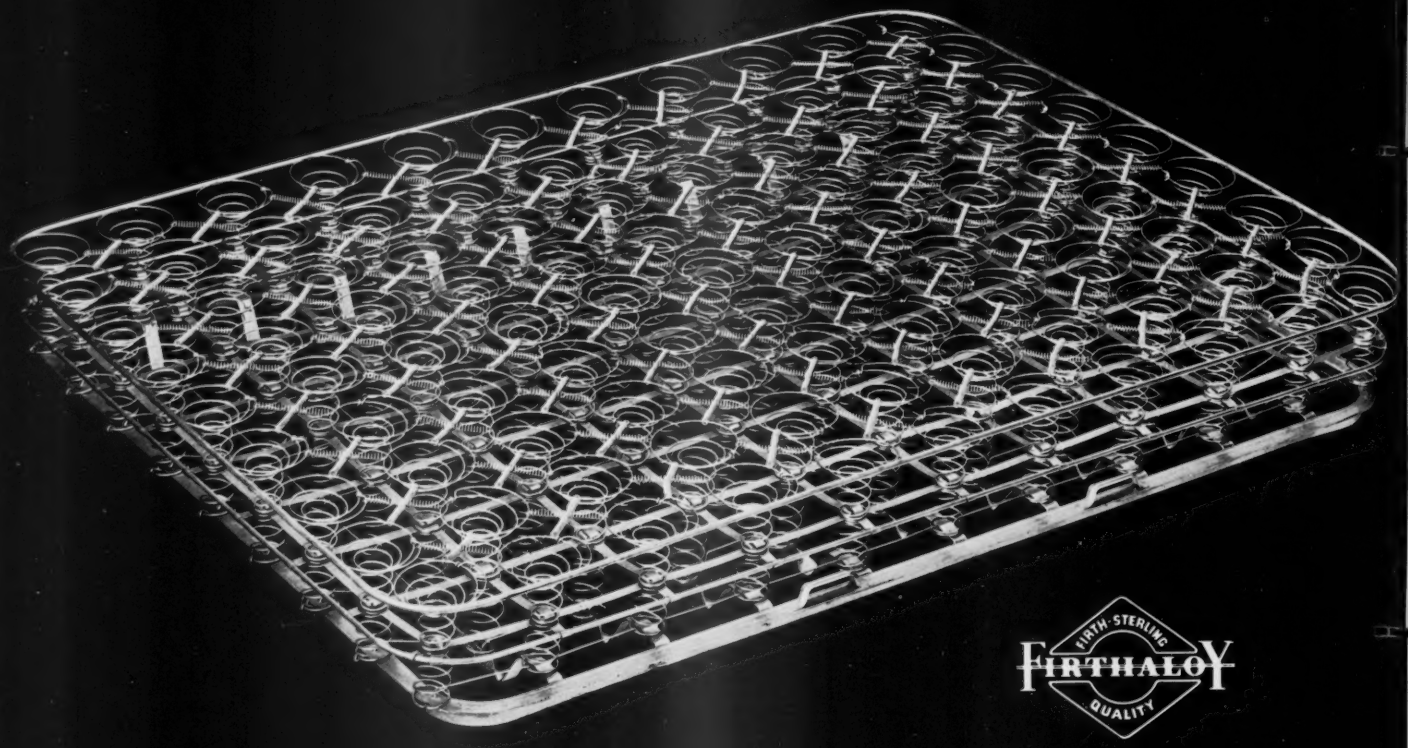

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A monthly publication devoted to the production of Wire, Rod and Strip.
Wire Products and Insulated Wire and Cable.
DRAWING --- ROLLING --- EXTRUDING --- FORMING --- FABRICATING

Vol. 16 DECEMBER, 1941 No. 12

Carbide Die Service Boosts Mill Tonnage

By A. E. Glen
Carboloy Company, Detroit, Mich.

The proper servicing of carbide dies in wire drawing plants will be found to cut rejections and die-service man hours and at the same time increase the tonnage of the mill. An analysis of some experiences with this problem. ✦ ✦ ✦ ✦ ✦

TODAY, with wire mills directing every effort at maintaining and increasing output in accordance with increased demands occasioned by defense requirements, a check-up on carbide die service procedure in individual plants may easily reveal simple methods by which down-time can be reduced, rejections cut, and man-hours now needed for die service transferred to productive work.

✦ ✦ ✦

WHEN carbide dies were introduced to the wire industry some 12 years ago, they were regarded as the most important development in years—assuring the success of continuous wire drawing, as well as permitting working to closer tolerances, assuring greater product uniformity and better finishes.

✦ ✦ ✦

ALTHOUGH, at first, servicing of dies was taken care of by the die manufacturer, the rapid spread of their use and general adoption of such dies soon led to wire mills setting up their own die service shops. At that time a great deal of cooperative study was given to the subject of carbide die service and specific procedures and equipment were developed to do the job.

A. E. GLEN

Entered the carbide industry in 1928. Served from 1928 to 1931 in the Carboloy Division of Cleveland Wire Works. From 1931 to present time served in the capacity of sales and service specialist on Carboloy dies. Experience includes the installation of die room equipment, training of personnel and die room layouts and analysis.

✦ ✦ ✦

WHILE there has been, through the years, a not inconsiderable improvement in die service equipment, basic procedures to be followed in getting the most out of carbide dies—and the most out of the mill using carbide dies—have not changed materially.

✦ ✦ ✦

THROUGH the years, of course, there have been continuous reductions in cost of carbide dies —so that the carbide die today is regarded as a common-place rather than the spectacular new and highly prized tool it proved to be. This fact, in itself, may have occasioned in some instances, a relaxing of strict adherence to ideal carbide die service methods.

✦ ✦ ✦

IN normal times this would be reflected mainly in faster die consumption and higher die cost —plus a somewhat higher over-

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all wire drawing cost. Today, however, other important advantages of proper service methods have a vital influence on mill operations, including as they do:

1. **Less wire spoilage and rejections.**
2. **Fewer man-hours required to service dies.**
3. **Elimination of man-hours and machine-hours lost while waiting for dies to be reconditioned.**
4. **Reduced rate of die wear in the mill, with fewer shut-downs for die changes.**
5. **Increased mill tonnage, as a consequence of the above.**

✦ ✦ ✦

IN the average wire mill, if there is improper servicing of dies, the first indication will usually be at the die room window. Under improper service conditions it is not very long before there will be found, here, two or three men waiting for dies to be cleaned out or waiting for new dies.

✦ ✦ ✦

IF a die has left the die room with a 'ring', it is not long before the wire starts scratching the die, requiring its removal. When this happens, not only will the original die have to be refinished, but it will usually be found that the wire coming from the first bad die will cause pick-up on subsequent dies along the line—and as a result not one but several dies will have to be changed. ✦ ✦ ✦

FOR example, recently, one manufacturer had been having considerable trouble with keeping the mill supplied with dies. Men were constantly waiting for dies. A check-up of die room practice and an inspection of dies in use and in storage revealed that angles in the dies varied as much as 8 degrees from one to the next, while bearing length varied from practically zero to as much as 150 per cent of diameter. What was worse, most of the dies had rings in the approach angle and no back relief.

✦ ✦ ✦

UNDER today's conditions it was of course impossible to shut the mill down and re-service all these dies before handing them out again. The next best thing to do was to install a new die room and die service system. As dies came back from the mill they were immediately and properly serviced before being put on the racks.

THE results were almost phenomenal. In one week, the lineup at the die window had disappeared. Fewer and fewer of the dies coming back from the mill were scratched and more and more dies just had to be polished. Previously many a die had come back so badly scratched as to require rough drilling and virtually complete refinishing.

✦ ✦ ✦

SOMETIMES the amount of carbide removal required to reclaim the die had been so great as to involve a 'skipping' of a complete die size. Die stocks were almost always incomplete. In two weeks under the new set-up, the vacant spaces in the main die rack were being filled with good dies. Die service men who previously were constantly being taken away from re-sizing and re-working of scratched dies, re-cutting of good dies, etc. — just to keep the mill running — were really accomplishing something and getting and keeping good dies on the shelves.

✦ ✦ ✦

THE extent to which proper die servicing reduces number of man-hours required was also demonstrated in another mill recently. Here a survey disclosed that all carbide dies were left in the mill until the die wore oversize or had become scratched. As a result of this practice, every die coming back to the die room had to be rough drilled and completely refinished. This meant a tremendous amount of extra work, in addition to the wastage of carbide incurred. ✦ ✦ ✦

A NEW die service control system was put in, and in a period of 2 months, purchases of new dies dropped considerably and it was actually possible to remove five men from the die room. Yet the mill was having less trouble with dies and producing wire with less rejections.

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THE prime reason why proper servicing of carbide dies is so vital is in the nature of the carbide material itself. The first sign of "wear" in a carbide die is in the approach angle, where a light ring begins to form. (See Fig. 1). If the die is allowed to "wear" too much, the ring becomes deeper at an accelerating rate, until it becomes so deep that the die has to be rough drilled to remove the ring. By this time the die is scratching the wire. The reason for this, in turn, is that carbide is not a fused material but is made up of thousands of small particles 'cemented' together. "Wear" in the die is caused by particles pulling out at the point of maximum pressure — the point at which the plastic flow starts. After too many particles have been pulled out, the surface becomes rough — particles pull out more and more easily, since pressure becomes more and more concentrated on high spots. The ring becomes wider and deeper and rougher. The roughness finally removes the coating from the wire, causing the wire to scratch and wear the die more and more rapidly.

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IF a die, on the other hand, is serviced before the ring becomes too deep, only a light touch up or polishing action is usually necessary. As a result, the life of the die is increased many times,

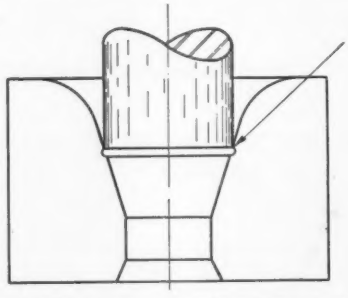

Fig. 1. Ring forms at point where wire starts to reduce. ✦ ✦ ✦ ✦

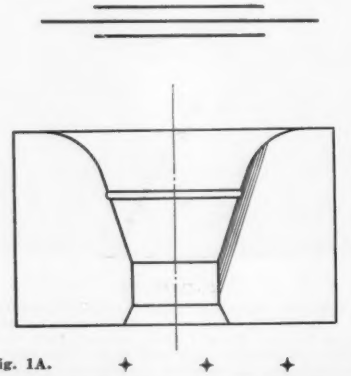

Fig. 1A. ✦ ✦ ✦ ✦

since removal of the light ring does not involve a change in the die size. At most it means a slight reduction in the bearing length. The latter is not critical, and not until the bearing becomes too short for further use is it necessary to resize the die.

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Die Room Control

IN order to obtain maximum service life from dies, reduce losses in man-hours and spoilage, a definite routine is required for the die room.

✦ ✦ ✦

FIRST of all a suitable rack should be provided for all finished dies. In this rack should be all sizes of dies used in the mill, clearly marked. Such a rack immediately discloses whether there is a shortage of any sizes, whether there is an excess in other sizes, etc. It serves as the main control for the die room and provides an excellent barometer as to die conditions in the mill.

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ALL dies handed out from the die room should come from this rack. As dies are returned from the mill, each and every one should be cleaned and inspected. They should then be segregated into the following classes:

1. **Dies needing only a polishing operation.**
2. **Dies to be polished and re-sized a few thousandths.**
3. **Dies requiring rough drilling.**

✦ ✦ ✦

A SEPARATE rack should be provided for each classification. These auxiliary racks then serve as a secondary control of work performed in the die room. If shortages are revealed in the main die rack, it becomes a simple matter to pick proper dies from the auxiliary racks, perform the necessary work and get them back into the main die rack before a tie-up has occurred. Obviously it also eliminates the necessity of hunting through a pile of dies to locate some particular size required.

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WITH this set-up — say with the three auxiliary racks graduated in steps of .010 inches—dies requiring polishing only, go from the polishers directly back into the main die rack. Dies to be re-polished and re-sized go from the die polishers to the finish bench where they are re-sized and from here to the main die-rack. Dies to be rough drilled go first to the rough drills, then to the polishers, then the die finishers, and from here into the main die rack.

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WITH a system such as this, every die in the main rack is necessarily in A-1 shape. It insures the wire drawer that every die he takes to the mill will draw good wire, helps to guarantee continuous operation, decreases wire scratching, increases mill tonnage and lowers die costs. A typical effective die-room layout is shown in Figure 2.

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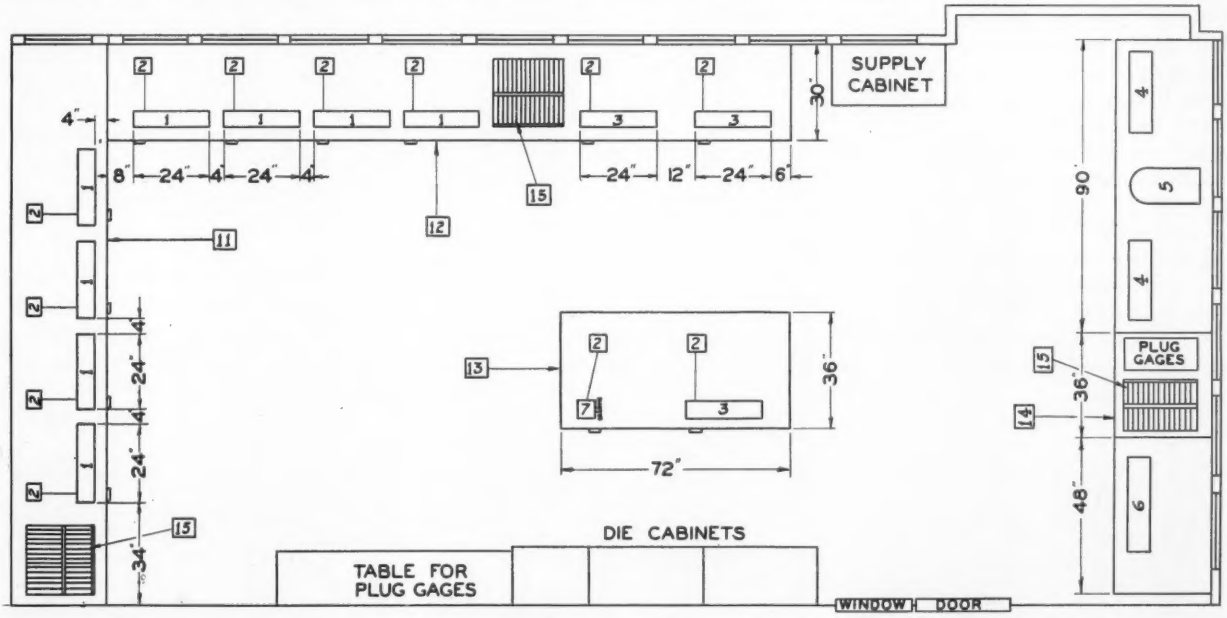
Carbide Die Design

EQUIPMENT required in the die room for proper servicing, is relatively simple. To understand the use of the various items, a typical carbide die is shown in



No.	Quan	Description
1	8	Automatic Polishers
2	8	¼ H.P. Motor 110 V.-60 Cy.-1 Ph.
2	4	¼ H.P. Motor 110 V.-60 Cy.- 1 Ph.
3	3	Polishing Heads
4	2	4 Spindle Roughers
5	1	Light Duty Rougher
6	1	Lathe
7	1	Wire Brush 6″ x ¾″ x ½″
11	1	Flat Top Bench 173″ Long 30″ Wide 36″ High
12	1	Flat Top Bench 220″ Long 30″ Wide 36″ High
13	1	Flat Top Bench 72″ Long 36″ Wide 36″ High
14	1	Flat Top Bench 36″ Long 30″ Wide 36″ High
15	3	Die Racks

Fig. 2. It will be noted that there is provided considerable duplication of equipment in this layout. For smaller mills, a smaller die room, laid out along the same general line but without all the duplicate equipment is, of course, amply adequate. ✦ ✦ ✦ ✦ ✦ ✦

Fig. 3. The bell angle allows the wire to flow freely into the die without scratching the coating, and also provides a means of entry for the die lubricant to enter the die.

✦ ✦ ✦

THE approach angle—where the actual reduction takes place—is the most vital part of the die. The angle required is governed by the type of wire being drawn (high or low carbon, copper, stainless, etc.) and also by the reduction taken.

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THE bearing of the die (which gives the size of the die) is not critical as to length. Such length is governed largely — between limits — by the type of wire drawn.

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THE back relief of the die is also important and a part of the die only too often neglected in servicing. A good back relief angle is necessary to permit the wire to pass from the die without scratching it, or removing the coating. Furthermore, a generous back relief angle prevents the die from chipping out at the back—a valuable insurance with materials as hard as carbides. A good back relief also keeps the actual area of contact more to the front of the nib, distributing work more evenly over the die. Quite often, dies with little or no back relief will show a peripheral crack in the bearing of the die. Where this occurs, increasing the back relief immediately eliminates the trouble in most cases.

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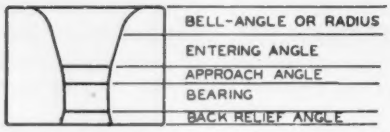

Fig. 3. ✦ ✦ ✦ ✦

AS previously mentioned, there is little actual 'wear' as such in carbide dies. What really happens is that small particles of carbide eventually pull out of the surface at the point of maximum pressure in the approach angle. To remove this apparent 'wear', the die is progressively polished and re-polished as shown in Fig. 1A every time the light ring begins to show up. It will be noted that the main effect is only a slight reduction in the bearing length every time the die is repolished. Only when the bearing has become too short does it become necessary to re-size the die — if proper die maintenance is continuously provided.

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Die Service Equipment

EQUIPMENT is available today to finish carbide dies from .010 inch or smaller, to 3.50 inches.

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MILLS drawing wire under .015 inch, have found it economical to buy carbide blanks. These blanks may be pierced on a machine such as the ten-spindle type shown in Fig. 4.

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ON dies from .015 to one inch, it is usually most economical to buy cored dies. Such dies have a cored hole roughly approximating approach, entering and bell angles. They are furnished in a number of hole sizes in each nib size and are produced to a cored accuracy requiring only a minimum of work to be done in the mill.

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FOR rough shaping such dies in sizes up to ¼ inch, a rough drilling machine such as shown in Fig. 5 may be used. The rough drill not only correctly shapes the approach, entering and bell angles but is also used to put the back relief in the die.

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ON sizes above ¼ inch, the quickest method is usually found to consist of placing the die first in a small bench lathe and boring it out, using a diamond boring tool. This permits shaping of the die to within .005 inch of size.

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A FLEXIBLE shaft tool (Fig. 6) is then used to polish the approach and bell angles. The bearing is put in with a steel lap. Final polish on large dies is best secured by using a piece of wood of the same shape as the die, with the wood covered with a piece of cotton on which has been dropped a mixture of olive oil and diamond powder. The die is revolved at high speed in the lathe while forcing the wood in the die, giving it a side motion.

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Abrasives

AS to abrasive, the piercing operation is usually performed with diamond powder of a grade depending on the size of hole required. For putting back

(*Please turn to Page 770*)

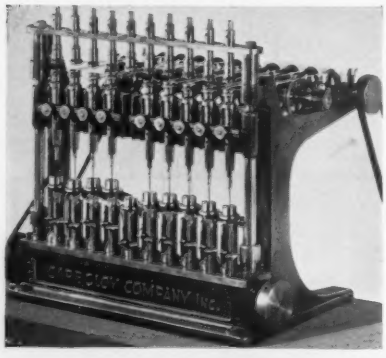


Fig. 4. ✦ ✦ ✦ ✦

Fig. 5. ✦ ✦ ✦ ✦

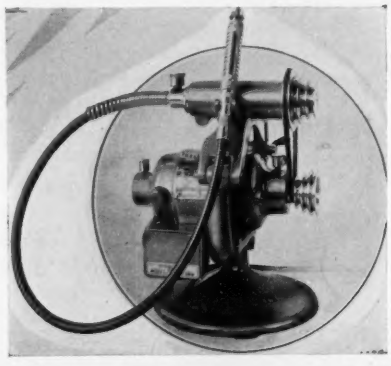


Fig. 6. ✦ ✦ ✦ ✦

"THE MACHINES THAT PUT THE 'RINGS' IN SPRINGS"

30-150
SPRINGS
per minute
(according to drive)

No. 1½

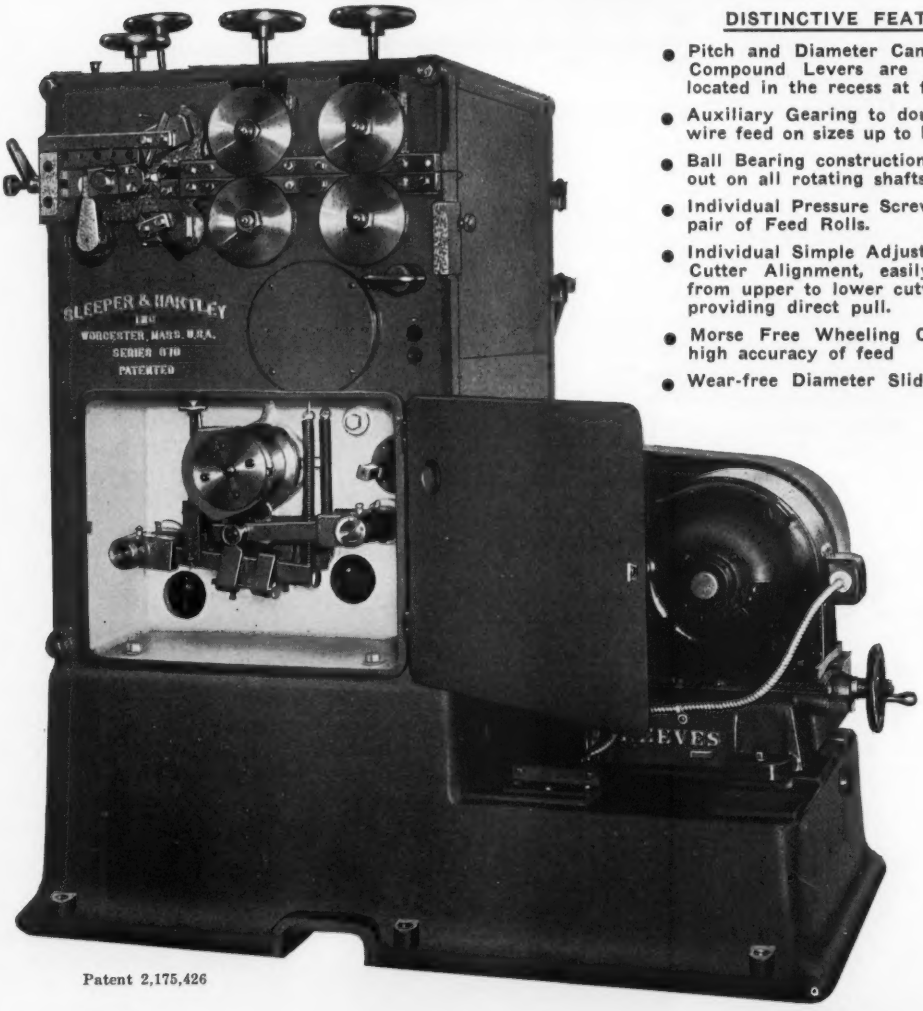
Universal Spring Coiler

30-150
SPRINGS
per minute
(according to drive)

SEGMENT TYPE

56" Model - Series 676

Wire Sizes No. 20 (.031") to No. 11 (.120")



Patent 2,175,426

DISTINCTIVE FEATURES

- Pitch and Diameter Cams and Compound Levers are accessibly located in the recess at front.
- Auxiliary Gearing to double the wire feed on sizes up to No. 15 (.072")
- Ball Bearing construction throughout on all rotating shafts.
- Individual Pressure Screw on each pair of Feed Rolls.
- Individual Simple Adjustment for Cutter Alignment, easily adjusted from upper to lower cutter thereby providing direct pull.
- Morse Free Wheeling Clutch for high accuracy of feed
- Wear-free Diameter Slide Connection

Door to recess left open to show accessibility to Cam Controls, Compound Blocks and Cams.

A ratchet crankhandle, used for set-up purposes, is removable.

SLEEPER & HARTLEY, INC.

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War Department Procurement In The Emergency

By Brig. General J. W. N. Schulz,
Director of Purchases and Contracts
Office of the Under Secretary of War
War Department, Washington, D. C.

An outline of the objectives and problems of War Department Procurement in the present national emergency. An address delivered at the Wire Association Defense Luncheon, held at Philadelphia, Pa., October, 1941. ✦ ✦ ✦ ✦

IT is a pleasure to meet with you today and discuss some of the objectives and problems of War Department procurement in the present national emergency. I am privileged to bring to you the greetings of the Under Secretary of War, the **Honorable Robert P. Patterson,** my chief, who is charged under the amended National Defense Act with the supervision of procurement of supplies for the Army and of the business of the War Department relating thereto. Judge Patterson has asked me to express his regret that pressure of duties has not permitted him to be here in person at this important meeting. He is fully aware of the patriotic and practical interest that has been taken for years by The Wire Association in the proper development of plans for war-time procurement of the needs of the Army and for industrial mobilization of the country in an emergency.

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AS a result of our war experiflict in which the world now finds itself—a conflict so far-reaching as to endanger even the peace and shelter of our own supposedly-isolated country — America is now, and for a year and a half has been, embarked on the greatest peace-time national defense program in her history. The Army which a little more than a year ago existed principally on paper has grown until it now numbers more than a million and a half. It inevitably follows that America has embarked also on a great program of procurement of supplies and munitions, as well as a stupendous program of construction of housing for our soldiers and the new facilities required for production of the vast numbers of airplanes, tanks, guns, ammunition and other equipment essential to meet the needs of the expanded Army.

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IN this situation it is a matter of congratulation to you and to the country that the Wire Association and the other great societies participating in the Metals Congress are devoting so much time and attention in your programs this year to the problems of national defense and to the study of means for furthering defense production and the conservation and proper use of the nation's resources in metals and substitutes.

Photo by U. S. Army Signal Corps.

BRIG. GEN. J. W. N. SCHULZ
Graduated West Point, 1908 as 2nd Lieut. Engineers. 1st Lieut., 1911. Capt., 1915. Colonel, (Temp.) 1918. Colonel, 1937. Brig. General, Jan. 1941. Awarded Distinguished Service Medal for Services in 1918.

✦ ✦ ✦

THE importance of wire in its various forms to national defense needs no emphasis before this gathering. Field telephone wire was of vital importance in the last war and still remains so in spite of the great developments in radio communication. American barbed wire was consumed in almost unbelievable quantities in Europe during the period 1914-1918. Thousands of tons of American wire rope were used in the great North Sea mine barrage. Who can foresee what future requirements may be for wire?

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AS your industry is affected in many ways by the current defense effort and may be affected to an even greater degree in the future, you may be interested in hearing about the defense program as we see it in the Office of the Under Secretary of War. To place before you a better picture of the situation, I should like to give you a general idea, which may be familiar to many of you, as to how the War Department procures its materials and supplies.

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YOU have undoubtedly heard stories and some of you may have had more than a speaking acquaintance with army purchasing during World War I. Much has been said and a great deal has been written of the confusion which resulted when the Army

went into the nation's markets to purchase great quantities of supplies and munitions of all kinds, and did so with five, and later more than five, separate bureaus, each competing with the other and with other purchasing agencies of our own Government and the Allies.

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LACKING adequate pre-planning, and without effective coordination, the separate efforts of the supply bureaus could scarcely be expected to function as an efficient smooth-working organization. By degrees a greater coordination and centralization of procurement activities was attained. The Assistant Secretary of War, Mr. Benedict Crowell, was made Director of Munitions, with the responsibility for procuring and furnishing the Army with the materials it needed. The Purchase, Storage and Traffic Division of the General Staff was organized to take over and centralize procurement of the War Department.

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AS a result of our war experiences, the Congress provided in Section 5a of the National Defense Act of 1920 for a permanent business head of the War Department in the person of the Assistant Secretary of War, operating under the general direction of the Secretary of War. The Assistant Secretary was thus charged, among other things, with supervision of the procurement of all materials, supplies and other business of the War Department relating to such procurement, including not only purchase, but manufacture and production of Army supplies at Government arsenals and factories. Section 5a of the National Defense Act was amended in December, 1940, by an act which provided for the appointment of an Under Secretary of War. The Under Secretary of War has now assumed the duties relating to procurement which were formerly assigned to the Assistant Secretary.

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PROCUREMENT is only one link in the supply chain of the Army, and not the first link. Before quantity procurement can be undertaken, a great amount of preliminary work is required. Appropriations must be obtained from the Congress and the funds apportioned to the various procuring agencies. Experimentation, research, development and service tests must be carried on to determine the most suitable types of supplies and equipment. These preliminary steps come under the supervision of the General Staff, the military side of the War Department.

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THE preliminary steps having been accomplished, the kinds and types determined upon, the funds secured and apportioned, the actual procurement stage — the second link in the chain of Army supply — is reached. This stage comes under the supervision of the Under Secretary, and represents the business side of the War Department.

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THE actual procurement of supplies is accomplished by the several supply arms and services, which are charged with that duty by law. The Quartermaster Corps, besides making its own procurement, is responsible for obtaining all supplies of a commercial nature which are common to two or more arms and services. Special and technical articles are procured by the technical arms and services responsible for such articles. Many of you have had dealings with one or more of these services—the Air Corps, Chemical Warfare Service, Engineers, Medical Department, Ordnance Department, Coast Artillery Corps, and, of course, the Signal Corps.

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WITHIN these arms and services the actual contracting is further decentralized so that it is largely accomplished by agencies located in or near centers or areas of specific sources of production or supply. Prior to the passage of the Act of July 2, 1940, the method of purchase usually employed was to enter into contracts after opening sealed bids. These bids are invited by wide circularization or advertising in the public press.

WHEN, in the spring of last year, it became evident that the new armament and munitions program would assume vast proportions, it was recognized that the usual and ordinary peacetime procurement methods involving advertising for bids on a competitive basis might unduly delay the placement of business, and Congress, by the Act of July 2, 1940, authorized the award of contracts without advertising whenever that method of procurement would serve to expedite the accomplishment of the program.

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IN addition to the authority to place contracts without advertising, authority was also given to place contracts on a cost-plus-a-fixed-fee basis. In granting this authority Congress specifically prohibited the awarding of contracts on a cost-plus-a-percentage-of-cost basis, such as was done during the last war. The cost-plus-fixed-fee type of contract enabled the Government to complete agreements with industrial organizations for the production of munitions and war materials much more promptly than would be possible by using a lump-sum contract. This was particularly true with respect to large orders for Air Corps and Ordnance materiel, and for the construction of plants to produce munitions, as in many instances manufacturers have had little or no experience upon which to base their estimate of cost for submission of lump-sum bids. It was also true of contracts for construction of cantonments where the urgency for completion at the earliest possible date dictated that everything be done to get construction started promptly. In all cases where this form of contract has been used, the interests of the Government have been safeguarded by requiring adequate inspection and careful auditing.

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TO give you some idea of the magnitude of the current armament program and the tremendous procurement problem which faced the War Department, it may be of interest to note that

there was made available the past fiscal year for procurement of equipment and facilities out of regular military appropriations approximately 11½ billions of dollars, to which was added nearly 3½ billions under Defense Aid appropriations, or a grand total for the fiscal year, which ended June 30, 1941, of nearly 15 billions of dollars. Since that date in the regular appropriation bill for 1942 and the First Supplemental Appropriations Bill for the current fiscal year, there has been added approximately 8 billions. The contract obligations actually entered into for the fiscal year just past represent almost thirty times the amount available for the fiscal year 1939 and twenty times the appropriated funds for the fiscal year 1940, and indicate the expansion that has been made necessary in the procurement operations of the War Department.

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THE procurement of munitions has been greatly complicated by the lack of production facilities for many of the items needed. You are all familiar with the tremendous expansion that has been going on in the aircraft industry and the new plants, many of which have already begun to produce items of Ordnance materiel and ammunition. This means that it was necessary for the War Department not only to procure, but to provide facilities for the manufacture of, a large part of the items needed.

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THE item of field wire, in which many of you may have some interest, was until quite recently one of the most difficult procurement problems confronting the Signal Corps. Fortunately during the past two or three years good use has been made of the limited funds which were available for educational orders. In case you are not all familiar with the term, "educational order," let me say that by that term we mean a limited production order which has been placed with the primary objective of training additional sources of supply for certain non-commercial items. Educational orders have enabled manufacturers to acquire the "know-how" of manufacture. Also under this program the Government has acquired a limited amount of special production equipment.

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AS a specific example, the development of production facilities for field wire may be of interest to you. During the post-World War I years, previous to 1938, it was estimated that the monthly capacity for production of field wire W-110-B did not exceed 1,500 miles. The particular type of wire required by the troops was in many ways undesirable from the manufacturing standpoint. It was difficult to manufacture, slow in production, and without a comparable commercial counterpart. This meant that the sources of supply were restricted to those few manufacturers who had the equipment necessary to meet the specification requirements. Continuing studies made by the Signal Corps, in close cooperation with your industry over the years since the last war, had considerably relieved the situation, and by 1938 the need for special equipment practically had been eliminated. At this point there were a number of manufacturers who had the necessary equipment and who, theoretically, could manufacture this wire. However, without actual experience in production there was no assurance that the required quantities could be produced without delay. Educational orders awarded to a number of manufacturers gave them an opportunity to work out the production problems involved. As a result, some fifteen extra plants have been added to the list of suppliers of this item. Experience in manufacturing has enabled certain changes to be made in the specification which contribute to easier production and improve the serviceability of the wire. As of July, 1941, the demonstrated monthly capacity for the production of field wire has been increased from 1,500 miles to 24,742 miles.

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IF we may judge by the experience of the last war, the expenditure of telephone wire in battle is tremendous. It has been stated that between June and November, 1918, our front-line troops expended over 100,000 miles of field wire, and were demanding more. With this requirement in mind, over 300,000 miles of field wire has been purchased under the present expansion program, approximately one-half of which has already been delivered.

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FURTHER requirements for wire have been set up by reason of "Blitzkrieg" tactics which have made necessary the standardization of a light-weight assault wire to accompany a light-weight field telephone. This assault wire, known as Type W-130, requires a special latex insulation. Three plants are being constructed by the Defense Plant Corporation for lease to manufacturers of assault wire under the patent rights controlled by the one original producer.

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BEFORE closing I should like to revert for a moment in a more general way to the procurement operations of the War Department. Primary emphasis has naturally had to be placed on getting orders under way quickly and efficiently to carry out the tremendous emergency procurement task devolving upon the Department. This has required the setting up of new and pioneering procedures to meet the new conditions. Not only has it been necessary to procure the supplies, equipment facilities and shelter needed for our forces, but under the Lease-Lend Act, obligations of the War Department have been extended to embrace the procurement of large quantities of equipment and supplies for other nations. Notwithstanding the great increase in the procurement load and the great pressure for speed, careful regard has continued to be given to economy and efficiency of purchase and to compliance with applicable laws and regulations. To add billions of dollars of con-

(*Please turn to Page 767*)

Defense Production Problems

By Dr. Chas. I. Gragg,

Chief Consultant to Executive Director of Supply Priorities and Allocations Board.
Office of Production Management, Washington, D. C.

Initiative by industry and planning by industry are indispensable to the efficient and successful achievement of our defense objectives. An address delivered at the Annual Wire Association Defense Luncheon held at Philadelphia, Pa., October, 1941.

THE Office of Production Management recently received from an important industry the following message: "Our inability to obtain needed materials is seriously interfering with our doing our part in this national emergency. What we need more than anything else is agreement upon a tangible program for our industry, which will enable us to plan. We are therefore submitting a program for 1942 operations. We respectfully ask approval of this program."

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IT is not my purpose today to go into details about this industry's plan nor to describe the legal safeguards under which the work of planning was done. Instead, I wish to stress two basic elements in this situation.

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THE first point is that the industry took the initiative in analyzing its primary need — the need for a program. The second point is that the industry laid such stress upon the function of industrial planning.

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THESE two elements, initiative by industry, and planning by industry, are indispensable to the efficient and successful achievement of our defense objectives.

✦ ✦ ✦

I SHOULD like to discuss first the question of initiative by industry. Initiative is, of course, a personal characteristic—it is not something possessed by the legal concept of a corporation or of a firm but is a matter of the feelings of individual human beings. Why should we pay particular attention to this quality, or force, termed initiative? Because at this time we are facing what is unquestionably the greatest challenge in the history of our nation—the challenge to convert our peacetime industry to an industry able to carry through an all-out armament program, so that we shall in fact become the great arsenal of the world's democracies.

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ALREADY, of course, we have drawn the preliminary blueprints in terms of dollars to be spent—some 60 billions of dollars appear now on that blue-print, and it is by no means unlikely that further large sums may soon be added. The objective of our defense effort, in plain words, calls for out-producing our adversaries. "We have committed ourselves to the production of sufficient war materials to assure the defeat of the Axis Powers." And if we are to do that, and do it in a reasonably small number of years, we must expect to allot an even larger portion of our productivity to the effort.

DR. CHAS. I. GRAGG

Associate Professor of Marketing, Harvard Graduate School of Business Administration. Chief Consultant to Executive Director of Supply Priorities and Allocations Board and to the Director of the Priorities Division of the Office of Production Management.

✦ ✦ ✦

BUT of the 60 odd billions on the books, only about one-sixth, or somewhat over 10 billions, have been actually spent. In other words, our currently designed defense effort is about 16% along the road.

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EVEN so, we already are facing grave industrial problems. There are priorities, or preferential delivery ratings, on long lists of materials essential for the production of both defense and non-defense finished products. There are shortages, present or in prospect, of such materials as aluminum, copper, rubber, nickel, silk, and so on, which make it necessary to allot the available supplies to those producers whose outputs are most urgently needed. There are already government regulations prohibiting the production, in whole or in part, of non-essential goods which the manufacture of which would interfere with the production of goods urgently

needed for defense or for maintenance of civilian health and safety.

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NOW, one point I wish to emphasize is this: Centralized government agencies can and do issue the necessary regulations to get scarce materials into essential uses, but the speedy, efficient carrying out of the defense program rests upon the degree to which individual businessmen use their own initiative in finding the best possible ways of applying their ingenuity, imagination, and energies to the task at hand. The true test of American individualism lies directly ahead of us. Unity of effort will come, I trust, from innumerable individual decisions, and not from any program of arbitrary regimentation. What is required is that every individual, and most especially, every business executive, realize that he and he alone can determine how best to direct and use his own efforts. The government can issue restrictive regulations, but it cannot issue personal advice or instructions to the thousands and hundreds of thousands of individuals who are responsible for operating our economy.

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RIGHT now, I suspect there is no small scattering of uncertainty, and anxiety, and perhaps even fear of economic loss, among the nation's business executives. Many of them no doubt are saying to themselves: "We can't get materials, we can't get defense orders, we can't build new plants to supply the mounting civilian demands"—Such reasoning might lead to feelings of inaction, passivity, or frustration.

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BUT such feelings are not characteristic of the American way of being. On the contrary, we know that the first settlers came to this land in the face of harsh obstacles — created by nature and by man. They faced shortages of capital and supplies. They faced daily risk to their lives. But their initiative never failed them, and they built for us a gigantic industrial system surrounded with all the democratic safeguards of a liberty-demanding and liberty-loving people.

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AND now, to preserve our system and our tradition of freedom for the individual, we have committed ourselves to use this vast industrial plant for the production of the weapons of war. We are converting our peacetime facilities so that they may produce enough, and more than enough, of the necessary materials of defense. It is not an arbitrary choice but a deliberate choice—we have chosen to remain free.

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IN this process of conversion, we find not only the need but also the opportunity for each individual to contribute, in the fullest measure, his own initiative to the reaching of a unified, energetic, and above all, successful program for defense. ✦ ✦ ✦

THE opportunity is before us, yet nevertheless there is no little confusion in the minds of many businessmen seeking to answer the question: "How can I best serve the nation in this crisis?" Such confusion is inevitable, and its removal is a problem common to government and business. As a matter of fact, the government is acutely aware of the fact that confusion and uncertainties exist in business. Mistakes have of course been made, both by defense agencies and by business agencies. These mistakes are part of the cost of building up so vast an effort in so short a time. A successful business enterprise is often the result of many years of trials and errors. We are now going through the growing pains of rapid expansion. Probably no business enterprise ever expanded at such a rate. From July 1940 to September 1941, actual expenditures for defense increased every month, except two, over the preceding month, by amounts up to 50% per month. Confusion and growing pains cannot be avoided under conditions, but aggressive efforts can be made to minimize such pains.

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ONE recent step by the government to aid in reducing and finally eliminating the confusion was the executive order creating the Supply, Priorities, and Allocations Board. That Board, designed and functioning as a policy-making agency, has already, as you know, embarked on the task of establishing major, over-all policies as guides to the adjustment of industry to the needs of the national emergency.

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ONE of this Board's first declarations, on September 2, was: "The Board realizes the magnitude of its task. It recognizes as well that success requires a vigorous, united effort on its part together with unstinted cooperation from the public in accepting certain responsibilities necessary in the defense of our democratic institutions.

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"OUR general policy is simple. Production shall be stimulated and organized to the limit of the nation's resources. Every available man and machine must be employed either on direct defense requirements or at work essential to the civilian economy. Along this road lies protection of our freedom and of the basic economy necessary to maintenance of that freedom."

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MORE specifically, the Board faced squarely the issue of cutting off the economic fat. It said: "We must forego the less essential, that we may have an abundance of the more essential. . . . Wherever possible to convert the less essential to military or essential civilian production, this will be done. Every means will be employed to expedite this process with a minimum loss of time for men and machines. But the less essential must go. This means cutting off the fat and hardening the muscles."

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IN this connection, I think we should not overlook the fact that Great Britain and her allies are said to be giving about 50% of their total productivity to making munitions and the other needs of war, while we here are not yet giving over 20% of our

productivity to that effort. Nor should we for a moment forget that modern war is economic war, that it means battles of production behind the actual fighting lines, and that the production battles are decided not alone by materials but by labor and management.

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TO outline further the policy objectives of SPAB, I should like to add these declarations:

(1) " . . . While recognizing that the civilian economy must be stripped of non- essentials, it must be kept in good running order and in more than stand-by condition."

(2) "Those materials, which may be hoarded . . . will be routed out and put to use where most needed in military and essential civilian production."

(3) "Scare buying against imaginary requirements of the future will be discouraged effectively."

(4) "The goal our country must reach to perpetuate our freedom and to assure victory for all who share our democratic philosophy means sacrifice. But we must make certain that sacrifices are not imposed because we are wasteful; because we fail to look ahead, or because proper use is not made of all available materials, men, and machines."

(5) "The Board believes that if the public knows why it must forego certain comforts . . . why, in substance, the fat must go and the muscles be strengthened, the cooperation vital to success will be had in full measure."

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FOLLOWING these and similar policy declarations, SPAB has decided a variety of issues, by

(1) denying of applications for construction of certain defense plants requiring large amounts of scarce and critical materials;

(2) ordering compilation of full schedules of military and civilian requirements as far ahead as possible, to be broken down into schedules of raw materials, labor, and machinery needed for production;

(3) planning for expansion of supplies of critical metals, and of certain dairy products;

(4) permitting manufacture of commercial transport planes designed according to certain military needs; and

(5) prohibiting the construction of non-essential public or private construction projects which use critical materials such as steel, copper, brass, bronze, aluminum, and so on.

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I BELIEVE it is fair to generalize about these and other governmental policy declarations such as those concerning prices, labor, taxation, and so on. One generalization I should like to suggest is this: These policies either have the effect of defining objectives, or of limiting specific actions by industry. The other generalization is: These policies do not undertake to tell any individual what to do or how to do it, within the areas of action left open to him. And that is where the opportunities for individual initiative and individual planning are found. That also is where the responsibility for efficient action is placed so largely on the individual.

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IN responding to these opportunities, the individual business executive has ordinarily these choices:

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FIRST, to continue in his ordinary activity. This choice may not be easy. Risks of material shortages, of competition for labor, of shifting demand, must be calculated in the light of the facts arising from a change-over in the total economy. To anticipate correctly the effects of cutting off the fat is no simple problem. It may, in a given case, call for great ingenuity in redesigning of products, through simplification, standardization, or substitution. Planning of an unusually high order, therefore, is called for.

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SECOND: the businessman may choose to seek direct defense orders. In bulk, these orders call for different production techniques, for plant conversion or expansion, for re-training of labor and supervisors. Furthermore, they call for different, and often more stringent, inspection methods.

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PLANNING for direct defense orders also raises problems of pricing, financing, negotiating; of sub-contracting, with its corollary problems, and of foreseeing post-emergency conditions.

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THIRD: a businessman may choose—and this choice may in many instances require the greatest risks and therefore the greatest courage — to separate himself from a job he regards as non-essential in order to seek out an opportunity for rendering service to the nation.

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ALL these choices may involve special economic risks, and sacrifice, perhaps long-lasting dislocation. Yet there is no reason to doubt that, in the interest of national unity and of speed in getting the job done and done well, the individual businessmen of this country will make these choices willingly. And if the initiative of the individual is applied energetically to planning how to carry out his choice, there can be no doubt about the final outcome.

THE WIRE ASSOCIATION

WHAT IT GIVES YOU FOR $10.00 ANNUAL DUES

1. **WIRE & WIRE PRODUCTS — For One Year.**
   The official publication of The Wire Association covering the Wire Industry; its Metallurgy, Technology, Research, Processes, Machinery and Personnel.
2. **THE ANNUAL BUYERS GUIDE & YEAR BOOK OF THE WIRE ASSOCIATION.**
   The Year Book Section contains: Constitution and By-Laws of The Wire Association; Details of year's meetings, etc.; List of Members, Index to Papers and Articles in WIRE & WIRE PRODUCTS.
3. **QUESTION AND ANSWER SERVICE.**
   Answers to technical and operating problems direct by mail. Available to members only.
4. **ANNUAL CONVENTION AND EXHIBITION.**
   (In Association with American Society for Metals and The National Metal Congress.) Technical Sessions, Plant Inspections.
5. **REGIONAL MEETINGS.**
   Attendance at the regional meetings which include Local Plant Inspections, Technical Sessions and Discussions.
6. **PERSONAL CONTACTS.**
   Both at Annual and Regional Meetings, and throughout the year, for interchange of helpful information.
7. **INFORMATION SERVICE ON MACHINERY, EQUIPMENT AND SUPPLIES.**
   The Technical, Catalogue and Correspondence Files of the Wire Association hold the answer to practically every "Where can I buy" problem. This service is available to members without charge.

For detailed information address

RICHARD E. BROWN—Executive Secretary

300 Main Street, Stamford, Conn.

America's Tomorrow

By Dr. Allen A. Stockdale
National Association of Manufacturers
New York, N. Y.

The text given here is only an outline of the address delivered at the Wire Association Defense Lunch at Philadelphia. Dr. Stockdale spoke extemporaneously and impressed those present as being the most eloquent speaker on the American platform. ✦ ✦ ✦ ✦ ✦

I AM glad to address the **Wire Association** because I am definitely aware of the widespread service it renders to the society in which we live.

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THE horizon of **America's Tomorrow** can be seen today only through the smoke of defense production. It may dim the outlines of America's tomorrow, but in no sense does it mean that there is no glorious future. We are all out to preserve the **American Way** without which our future would be meaningless.

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THERE is no doubt that defense of America is the number one job which requires the kind of performance of American Industry which makes that defense sure. The encouraging note is that armament production has stepped up as much in one year as Hitler with his much vaunted regimented economy has been able to do in six years.

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THE job of defense is not only one of production—it is one of prevention. We must produce the material needed and we must also prevent the "creeping collectivism" at home which would completely change our American way of life.

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THE defeatist says there is no tomorrow for America. The facts say there is a brilliant future. It is true we will change our geographic frontiers to scientific frontiers. At the present time industry is spending three hundred millions of dollars a year in research laboratories alone in order to find a better way of doing things at less cost to the public.

A quick glance at the facts will show what solid foundation for hope in the future really exists in things that are still to be done which will build factories, occupy labor, spread pay roll turnover and produce an economical foundation for America's tomorrow.

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OUR growing demands for new goods and new services cannot be satisfied by natural products alone. We must outdo nature in the laboratory. In every field of endeavor there is enough unfinished business to supply thousands of problems for industry and science to work on. Here are a few of the jobs that need to be done:

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DR. ALLEN A. STOCKDALE
National Association of Manufacturers
Born in Zanesville, Ohio. Graduate Boston University School of Theology; post graduate work in Philosophy and Sociology. Resident Student, Oxford, England, 1922-23. Recently pastor of First Congregational Church, Washington, D. C.

New Products

New plastics and synthetic materials with properties of which we have no inkling now.

Family airplanes, as safe and easy to operate as an automobile, and travelling at speeds now only dreamed of, and capable of landing on top of a flat roofed building.

Material to which ice will not adhere for use on airplane wings, highway surfaces, windshields, etc.

Low cost air conditioning equipment for automobiles.

Non-shrinking mortar.

A material for dissipating static electricity from paper, driving belts for machinery, artificial silk, etc.

A machine that will convert sound vibrations of the voice directly into printed form.

Television on the 'phone so that the other person's face is visible.

A permanent moth proofing agent.

Cast iron that would bend rather than break under stress.

Water-proof paper.

Development of a form of rubber that will keep its traction on wet surfaces.

Development of a tobacco that leaves no ash.

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New Industrial Processes

Cheaper methods of producing electricity to make it available in new industrial fields.

New sources of tremendous energy to be released from the atom.

Non-inflammable lumber.

A synthetic process for producing carbohydrates and hydrocarbons from the air.

A successful process for preserving bread by freezing.

A device to take the waste energy from exhaust gases and utilize it for jet propulsion at very high speeds, thereby adding to the performance of aircraft by the utilization of power now wasted.

A machine to weld pieces of lumber into an endless board.

A method of making copper and brass stainless.

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Aids to Health

Proper feeding for the millions of people now suffering from nutritional deficiencies.

An efficient method of immunizing people against the common cold.

Additional application of chemical technology to medicine. We need a chemical method of dissolving abnormal calcium without affecting the normal calcium, for example, and, for the treatment of cancer, a method of preventing abnormal growth of cells

without upsetting normal growth.

Serum to inoculate against measles.

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In the Home

Millions of additional homes, to be built with conveniences now undreamed of.

Electricity for millions of families that now do without it.

In homes already wired for electricity, more labor saving electrical appliances. A recent survey revealed a $16,000,000,000 market in this field. To satisfy it would keep 1,000,000 persons at work for four and a half years.

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For Agriculture

Electric farming, including the heating of the soil to force crops.

A "binder" for soil to keep it from being carried away by erosion.

Insect control by a death ray or a controllable fumigant, not harmful to animals or humans, for farm and garden use.

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Miscellaneous

Air conditioned cities, some say, glassed over and maintained at constant temperature and humidity the year 'round.

Superhighways that eliminate curves and grades to provide safer transportation.

Solutions to such problems as these: What is friction? Why is glass transparent? Why are some substances good conductors of electricity or heat or sound? The answer to one of these questions might lead to vast new industries.

Methods for dispelling fog over airports.

An economical method of storing winter cold for summer use and summer heat for winter use.

Improved methods for eliminating noise.

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IN America's Tomorrow management has a definite responsibility in creating jobs for those who will be released after the emergency and in working out the problems that face industry under such trying and disturbed days.

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LABOR also has a responsibility —it is easy to see that labor costs can increase to such an extent as to create inflation. Wages dare not rise faster than productive efficiency. Labor should not use defense emergency to get unjustified concessions and labor must remember that the right to work is as sacred as the right to strike.

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GOVERNMENT has responsibilities—it must give to the country a sound program of financing. Government must see that reform policies do not handicap production and the government must not impose upon the people the expenses of non-emergency production which will handicap things that are of immediate necessity.

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EACH citizen has responsibility. There must be necessary sacrifices in adjusting to defense economy. Each citizen must be willing to bear his share of higher taxes which are necessary to meet the cost of defense. There is a responsibility for that loyalty, patriotism and unity which enables the nation to meet the challenge and function with the power of an inspired democracy.

ANNOUNCING A SPECIAL ISSUE FOR JANUARY, 1942

— SPECIAL BECAUSE —

The discussions on technical papers at the annual meeting of the WIRE ASSOCIATION will be published in their entirety in the regular January issue of WIRE and WIRE PRODUCTS.

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The Directors of the WIRE ASSOCIATION have approved this plan to provide these discussions to all members without extra expenditure.

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— SPECIAL BECAUSE —

THE MORDICA MEMORIAL LECTURE FOR 1941

BY KENNETH B. LEWIS

Consulting Wire Mill Engineer

On the Subject

"THE SHAPE OF THINGS TO COME"

WILL ALSO BE PUBLISHED IN THIS ISSUE.

— TO OUR ADVERTISERS —

The advertising value of this special arrangement to be followed in the January issue of WIRE and WIRE PRODUCTS is obvious.

✦ ✦ ✦

Revised rate card will apply to this issue — Closing date, December 20th, 1941.

✦ ✦ ✦

RESERVE YOUR SPACE AT ONCE

WIRE & WIRE PRODUCTS

300 MAIN STREET PHONE STAMFORD 3-0482 STAMFORD, CONN.

Foreman Training Service

Recent discussions with officials of the Connecticut Bureau of Vocational Education, State Board of Education, have led to the development of a new type of foremen training as outlined in this brief article. The principles outlined can well be applied to training foremen in the Wire Industry. ✦ ✦ ✦

The Foreman

MOST employers are confronted with a problem with which the public is not familiar. Publicity is plentiful on the subject of defense contracts, plant expansion and the training of new workers, but behind this scene, inconspicuous to the outsider, moves a group of foremen and supervisory personnel — the backbone of every organization. Theirs is not a job which to most can be considered spectacular. No Sunday paper shows them in action or reveals their accomplishments. Yet every management looks to its foremen for the solution of many technical problems, and holds them accountable for the efficiency of production. The foreman must possess the skill and understanding of the worker, coupled with the judgment and techniques of the executive. This "top-sergeant" of the industrial army is called upon to work intelligently and effectively under all sorts of circumstances. Rapid fire thinking and accurate judgment are called for on his job. Yet the problem of training this man, after the "headaches" of selecting him have passed, remains almost insolvable.

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Training the Foreman

MANY methods have been promulgated which purport to produce trained foremen. The foreman's job necessitating as it does, the exercising of sound judgment, requires any training program to provide ample opportunity for "brass tack" thinking. It is difficult, if not impossible, to plan a course from which emerges the perfect foreman. Judgment cannot be taught—it develops from the application of experience to new situations.

Reprinted from the October issue of "Connecticut Industry" published by the Manufacturers Association of Connecticut, Inc.

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The Conference Method of Training

ONE of the methods which has proved successful in the development of thinking on the job is known as the conference procedure. By this method groups of foremen are given an opportunity to discuss pertinent problems and share experiences under the guidance of a conference leader who crystallizes the opinions of the group, helps in the analysis of problems, and directs the discussion toward a satisfactory solution of the problem.

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A Training Service Available

THE Connecticut State Department of Education, Bureau of Vocational Education, is prepared to render a service — without charge to employer or employee— to any company interested in training foremen by the conference method. Two plans are suggested, as follows:

1. A trained conference leader may be obtained who will handle conferences held in the plant requesting the training (if there is a group of twenty or more foremen) or at a centrally located plant where foremen from several companies may conveniently meet. Conferences may be held during the regular working hours or outside of working hours, whichever plan is more satisfactory to the employer.

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2. A few employees from any company may be selected for training as conference leaders. Classes can be organized to train groups of employees selected for this purpose, and at the completion of the course these employees, equipped with the skills for operating a conference, will be prepared to conduct foremen conferences for their employers.

Plan 1 trains foremen. **Plan 2** trains foremen conference leaders.

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What the Conference Method Is

1. It is a method peculiarly fitted to groups of adults.
2. It seeks to stimulate thinking through encouraging participation.
3. Its plan is flexible, following a general pattern rather than a rigid predetermined course.
4. It seeks to develop a capacity to analyze new problems by directing analysis of existing ones.
5. Its object is to develop ability to reason and exercise judgment rather than to give information.
6. It makes use of the combined experience of the group rather than depending on the knowledge of an instructor.

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The Subjects Discussed

THE phases of the foreman's job which lend themselves readily to consideration by the conference method of training are:

Maintaining discipline or control of workers

Handling grievances of the dis-

(*Please turn to Page 761*)

Outstanding Personalities of the Wire Industry

H. T. Florence, Vice President, Cleveland Crane & Engineering Company

H. T. FLORENCE has been named vice president of The Cleveland Crane & Engineering Co., Wickliffe, Ohio. This position is in addition to his present capacity of general manager. Mr. Florence has served with the company for 20 years in various shop departments, engineering and sales.

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W. C. SAYLE who formerly was vice president has been elected president. He succeeds his father the late W. D. Sayle who founded the company in 1897.

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Robert M. Kalb, Assistant Chief Engineer, Kellogg Switchboard & Supply Co.

ROBERT M. KALB, heretofore research engineer, Bell Telephone Laboratories, Inc., New York, has been appointed assistant chief engineer, Kellogg Switchboard & Supply Co., Chicago.

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L. C. Peskin, Director, Spring Mill Products, American Steel & Wire Co.

LEONARD C. PESKIN has been appointed director of spring mill products, collaborating with the sales department relative to processes and products of American Steel & Wire Co., subsidiary of U. S. Steel Corp.

✦ ✦ ✦

MR. PESKIN has been associated with American Steel & Wire since July, 1934, when he was engaged as a research laboratorian at Worcester, Mass. In March, 1937, he was placed in charge of the vibration department of the Worcester research laboratory and in March, 1938, he was made research engineer. In November of the same year he was named engineer in charge of transmission and in August, 1940, he was moved to Cleveland where he has been technical engineer at the company's main offices.

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BORN in Hartford, Conn., on April 26, 1908, Mr. Peskin attended the public schools of that city before matriculating at the Massachusetts Institute of Technology, where he obtained his Bachelor's, Master's and Doctor's degrees in Science. He also served successively as student assistant, part-time instructor and full-time instructor at M.I.T. before becoming associated with American Steel & Wire Co.

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Stanley Bracken, General Manager of Manufacture, Western Electric Company

THE Western Electric Company announced the appointment of **Stanley Bracken** as General Manager of Manufacture, effective October 1st. This is a new office in the Company made necessary by the great increase in its manufacturing activities. Mr. Bracken has a record of 29 years service with Western Electric, having started after graduation from the University of Nebraska in 1912 as a student engineer in the Hawthorne Works. He has held many responsible positions in the business and is at present its Engineer of Manufacture.

H. T. FLORENCE
Vice President,
Cleveland Crane & Engineering Company

✦ ✦ ✦

Norton Co. Announces Changes In Personnel

A NUMBER of changes in the Norton sales organization are announced by **W. R. Moore**, general sales manager.

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J. E. STRACHAN, JR. of the Cincinnati territory has been assigned to the Pacific Northwest which includes the states of Washington, Oregon, Idaho, Montana and Wyoming where he replaces **A. M. Pitts** who resigned on October 1.

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S. F. PRESCOTT of the Worcester sales engineering department becomes salesman for the Cincinnati territory.

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J. P. ENRIGHT, formerly a member of the Chicago office staff, becomes field engineer for the Chicago district.

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WENDELL C. FORSMAN of the sales engineering department at Worcester has been appointed field engineer for Detroit and vicinity.

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A. A. Bull, President, Michigan Wire Cloth Company

"MILITARY aircraft today must travel at increasing speeds at higher altitudes. This stresses the vital importance of improved design in aircraft fuel strainers," said **A. A. Bull**, newly elected president of Michigan Wire Cloth Company, Detroit, in business since 1860.

✦ ✦ ✦

MR. BULL was formerly president of Handy Governor Corporation, and is now a director of the King-Seeley Corporation. Other new officers at the Michigan Wire Cloth Company are: **S. W. Farnsworth** of New York, treasurer; and **Harold A. Wilson**, com-

(*Please turn to Page 771*)

STATISTICS --- SEPTEMBER, 1941

PRODUCTION FOR SALE OF IRON AND STEEL PRODUCTS

AMERICAN IRON AND STEEL INSTITUTE
Capacity and Production for Sale of Iron and Steel Products

September - 1941
PERIOD

		Number of companies	Items	Annual Capacity Net tons	Production for Sale—Net Tons							
					Current Month				Year to Date			
							Shipments				Shipments	
					Total	Per cent of capacity	Export	To members of the industry for conversion into further finished products	Total	Per Cent of capacity	Export	To members of the industry for conversion into further finished products
STEEL PRODUCTS	Ingots, blooms, billets, slabs, sheet bars, etc.	41	1	xxxxxxx	718,889	xxx	295,861	165,399	5,023,894	xxx	1,402,575	1,512,654
	Heavy structural shapes	9	2	5,167,200	372,266	87.8	11,213	xxxxxxx	3,430,208	88.8	133,895	xxxxxxx
	Steel piling	4	3	422,000	28,090	81.1	4,177	xxxxxxx	266,735	84.6	26,555	xxxxxxx
	Plates—Sheared and Universal	19	4	5,692,560	524,434	112.2	25,114	5,634	4,238,184	99.5	255,751	29,584
	Skelp	8	5	xxxxxxx	75,428	xxx	11,276	29,773	764,762	xxx	125,396	314,043
	Rails—Standard (over 60 lbs.)	4	6	3,613,600	112,896	38.1	478	xxxxxxx	1,313,650	48.6	49,304	xxxxxxx
	Light (60 lbs. and under)	6	7	302,800	12,896	51.9	3,886	xxxxxxx	130,776	57.7	48,398	xxxxxxx
	All other (Incl. girder, guard, etc.)	2	8	102,000	1,166	13.9	76	xxxxxxx	19,246	25.2	2,551	xxxxxxx
	Splice bar and tie plates	15	9	1,312,200	43,211	40.1	540	xxxxxxx	539,962	55.0	11,457	xxxxxxx
	Bars—Merchant	40	10	xxxxxxx	486,264	xxx	27,004	55,312	4,752,696	xxx	360,738	571,002
	Concrete reinforcing—New billet	18	11	xxxxxxx	150,767	xxx	18,011	xxxxxxx	1,175,225	xxx	158,607	xxxxxxx
	Rerolling	18	12	xxxxxxx	30,023	xxx	1,951	xxxxxxx	175,604	xxx	11,748	xxxxxxx
	Cold finished—Carbon	23	13	xxxxxxx	94,911	xxx	2,393	xxxxxxx	936,831	xxx	18,587	xxxxxxx
	Alloy—Hot rolled	18	14	xxxxxxx	144,380	xxx	5,674	19,578	1,413,345	xxx	116,374	208,954
	Cold finished	17	15	xxxxxxx	17,281	xxx	1,418	xxxxxxx	137,589	xxx	23,250	xxxxxxx
	Hoops and baling bands	5	16	xxxxxxx	9,132	xxx	271	xxxxxxx	88,705	xxx	3,009	xxxxxxx
	TOTAL BARS	62	17	13,007,345	932,758	87.3	56,722	74,890	8,679,995	89.2	692,363	779,956
	Tool steel bars (rolled and forged)	17	18	180,470	14,093	95.1	501	xxxxxxx	111,469	82.6	5,723	xxxxxxx
	Pipe and tube—B. W.	16	19	2,242,040	155,049	84.2	6,658	xxxxxxx	1,294,145	77.2	90,795	xxxxxxx
	L. W.	8	20	895,260	40,881	55.6	1,863	xxxxxxx	372,832	55.7	23,013	xxxxxxx
	Electric weld	5	21	551,020	46,398	102.6	7,334	xxxxxxx	407,263	98.8	22,790	xxxxxxx
	Seamless	15	22	2,997,160	179,037	72.8	10,340	xxxxxxx	1,609,411	71.8	142,944	xxxxxxx
	Conduit	8	23	174,140	13,025	91.1	482	xxxxxxx	118,883	91.3	3,514	xxxxxxx
	Mechanical Tubing	10	24	392,370	29,582	91.8	1,488	xxxxxxx	255,328	87.0	18,632	xxxxxxx
	Wire rods	22	25	xxxxxxx	121,069	xxx	27,061	16,773	1,146,645	xxx	149,968	192,266
	Wire—Drawn	41	26	2,343,170	203,387	105.7	10,049	2,357	1,757,920	100.3	110,126	17,209
	Nails and staples	18	27	1,153,930	62,605	66.1	5,241	xxxxxxx	598,902	69.4	53,133	xxxxxxx
	Barbed and twisted	16	28	474,210	20,515	52.7	5,328	xxxxxxx	205,880	58.0	46,839	xxxxxxx
	Woven wire fence	16	29	777,785	21,661	33.9	126	xxxxxxx	236,504	40.7	1,664	xxxxxxx
	Bale ties	11	30	110,970	7,582	83.2	30	xxxxxxx	63,517	76.5	171	xxxxxxx
	All other wire products	7	31	41,380	2,018	59.4	-	xxxxxxx	15,887	51.3	3	xxxxxxx
	Fence posts	12	32	126,165	4,709	45.5	68	xxxxxxx	54,480	57.7	794	xxxxxxx
	Black plate	11	33	340,030	39,035	139.8	2,185	-	324,506	127.6	28,664	43
	Tin plate—Hot rolled	7	34	515,620	39,385	93.0	7,495	xxxxxxx	250,051	64.8	34,568	xxxxxxx
	Cold reduced	11	35	3,542,040	285,966	98.3	21,226	xxxxxxx	2,284,090	86.2	205,703	xxxxxxx
	Sheets—Hot rolled	30	36	xxxxxxx	575,257	xxx	20,493	13,129	5,673,049	xxx	233,164	161,582
	Galvanized	16	37	xxxxxxx	122,151	xxx	5,958	xxxxxxx	1,292,122	xxx	85,372	xxxxxxx
	Cold rolled	18	38	xxxxxxx	211,831	xxx	6,860	xxxxxxx	2,362,079	xxx	55,745	xxxxxxx
	All other	13	39	xxxxxxx	57,458	xxx	1,523	xxxxxxx	586,913	xxx	17,650	xxxxxxx
	TOTAL SHEETS	31	40	13,298,490	966,697	88.5	34,834	13,129	9,914,163	99.7	391,931	161,582
	Strip—Hot rolled	24	41	3,244,680	152,097	57.1	5,927	17,833	1,533,739	63.2	58,490	190,358
	Cold rolled	40	42	1,618,070	103,629	78.0	1,842	xxxxxxx	980,428	81.0	16,550	xxxxxxx
	Wheels (car, rolled steel)	5	43	422,820	22,305	64.3	334	xxxxxxx	190,409	60.2	1,458	xxxxxxx
	Axles	5	44	480,350	16,365	41.5	522	xxxxxxx	140,132	39.0	2,551	xxxxxxx
	Track spikes	11	45	325,770	11,839	44.3	321	xxxxxxx	128,679	52.8	1,691	xxxxxxx
	All other	6	46	67,600	3,854	69.4	102	xxxxxxx	34,268	67.8	1,196	xxxxxxx
	TOTAL STEEL PRODUCTS	161	47	xxxxxxx	5,384,817	xxx	560,720	325,788	48,436,943	xxx	4,161,156	3,197,095
	Pig iron, ferro manganese and spiegel	26	48	xxxxxxx	659,342	xxx	36,061	257,487	5,896,276	xxx	415,927	1,855,462
	Ingot moulds	4	49	xxxxxxx	63,888	xxx	458	xxxxxxx	562,768	xxx	3,248	xxxxxxx
IRON PRODUCTS	Bars	12	50	172,915	9,065	63.9	27	424	73,256	56.6	651	4,012
	Pipe and tubes	3	51	109,300	6,629	73.9	340	xxxxxxx	51,213	62.6	2,131	xxxxxxx
	All other	2	52	71,000	2,347	40.3	458	-	16,594	31.2	2,966	-
	TOTAL IRON PRODUCTS (ITEMS 50 to 52)	14	53	288,715	18,041	76.1	834	424	141,063	65.3	5,748	4,012

Total number of Companies included - 181

The estimated average yield of products for sale from ingots produced by the companies included above is 71.1 *%, which applied to their total ingot capacity equals* 59,493,000 *net tons of finished rolled products.*

Production for sale, less shipments to members of the industry for further conversion, related to the estimated yield is as follows:

Current month 5,059,029 *N. T.;* 103.6 *%*

Year to date 45,239,848 *N. T.;* 101.7 *%*

During 1940, the Companies included above represented 97.8% of the total output of Finished Rolled Products.

If You Are Not A Member Of The Wire Association—Now Is A Good Time To Join!
The Annual Dues Are $10.00 — For detailed information address
RICHARD E. BROWN, Secretary
300 Main Street, THE WIRE ASSOCIATION Stamford, Conn.

Exports and Imports of Wire

Exports of Iron and Steel Up Again in August

CONTINUING the trend begun in July, exports of iron and steel products again increased in August, totaling 617,477 gross tons valued at $44,375,965. Although this figure represents a 29 percent gain over July exports of 478,016 gross tons valued at $34,855,419, it is still well below the August 1940 figure of 1,048,816 tons valued at $53,870,693.

✦ ✦ ✦

CUMULATIVE 8 months' exports totaled 4,112,161 tons valued at $302,433,664, a decline from the 4,521,568 tons valued at $291,210,789 for the comparable period of 1940.

✦ ✦ ✦

NONALLOY ingots, blooms, etc., formed, in point of tonnage, the most important item exported—the total of 217,563 tons increasing 88 percent over the 115,778 tons exported in July. Pig iron took second place, the 64,925 tons exported in August being slightly above the 63,057-ton figure of July. Tin plate and taggers' tin ranked next with 32,588 tons, followed by nonalloy "black" (ungalvanized) steel sheets, 31,906 tons, and non-alloy other plates, 26,536 tons.

✦ ✦ ✦

AT 80,255 tons valued at $1,564,209, exports of scrap in August increased 34 percent over July exports of 59,905 tons valued at $1,160,533, but were far less than the 355,991 tons valued at $6,078,241 exported in August 1940.

✦ ✦ ✦

CUMULATIVE exports for 1941 totaled 556,040 tons valued at $10,836,093, compared with the 2,161,926 tons valued at $36,629,435 exported over the comparable period of 1940.

IRON and steel scrap accounted for 79,472 tons of the total exported in August, this figure being further broken down as follows: No. 1 heavy melting, 21,192 tons; No. 2 heavy melting, 40,264 tons; baled and bundled, 6,557 tons; cast and burnt, 1,876 tons; other, 9,583 tons.

✦ ✦ ✦

TIN-PLATE circles, strips, cobbles, etc., with 227 tons, and waste-waste tin plate, with 556 tons, were the other scrap items exported. ✦ ✦ ✦

Canada

THE scrap iron and steel trade has been placed under Government control. All dealers in scrap iron and steel are required to obtain a license from the Steel Controller. Licensees must comply with maximum prices established by the Comptroller, keep records of all purchases and sales, submit monthly reports showing amount of scrap of each classification sold, prices at which sold and

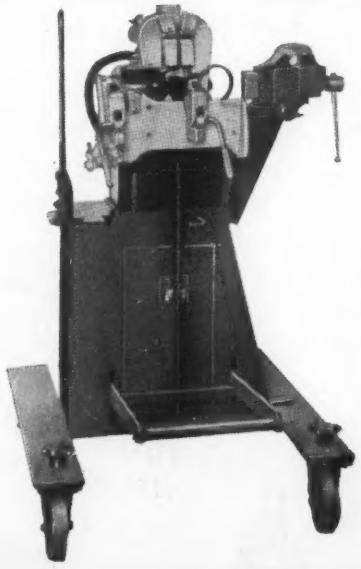
(*Please turn to Page 760*)

MICROMETER PRECISION MICRO-WELD TRADE MARK REG. U. S. PAT. OFF.

CONTINUOUS IMPROVEMENT

MICRO-WELDERS with dial indicating annealing attachments are now available for high carbon wire.

There is positive control of annealing temperature and already hundreds of these special MICRO-WELDERS are proving their dependability and satisfactory performance with leading manufacturers.



MICRO PRODUCTS COMPANY
20 NORTH WACKER DRIVE, CHICAGO, ILL.
Telephone, State 7468

☆ PARANITE ☆ KENNECOTT ☆ SIMPLEX ☆ HABIRSHAW ☆ DE VILBISS ☆ OKONITE ☆ KERITE ☆ BISHOP WIRE ☆ GATES ☆ GENERAL ELECTRIC ☆ GOODRICH ☆ THERMOID ☆ NORTHERN ELECTRIC ☆ ANACONDA ☆ GENERAL CABLE ☆ ROEBLING ☆ SWAN ☆ BOSTON ☆ GOODYEAR ☆ U. S. RUBBER ☆ WESTERN ELECTRIC

Our Star Salesmen

Throughout the world there are many users of Robertson Products. For these users, Robertson equipment is saving in production and maintenance costs . . . is giving the consistently fine, long-time service that has ever been associated with the Robertson name.

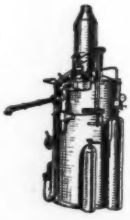
These users are our star salesmen. Their experience is positive proof of Robertson Quality . . . their recommendations count more than 1,000 claims. Why not consult them and be *sure*?

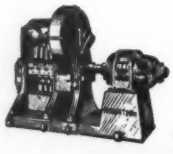
We will be glad to refer you to those who have used Robertson equipment in your own line of work . . . a note on your letterhead brings this information without obligation.

Robertson makes all types of lead encasing machinery for rubber hose and electrical cable manufacturers, including Extrusion Presses, Hydraulic Pumps, Melting Furnaces and Pots, Dies and Cores, Hydro-pneumatic Accumulators and Lead Sheath Stripping Machines.

JOHN ROBERTSON CO., INC.

125-137 WATER STREET, BROOKLYN, N. Y.





Exports and Imports of Wire

(*Continued from Page 759*)

names of purchasers, amount of each classification of scrap on hand or on order at close of preceding month, and whether stocks are ready for immediate shipment or require further treatment or preparation.

✦ ✦ ✦

Eaton Manufacturing Co. to Make Armor Piercing Shells

EATON MANUFACTURING CO. has obtained an Army Ordnance contract to manufacture 1,500,000 37 m.m. armor piercing shells at its automatic heater plant here.

✦ ✦ ✦

THE new defense work will necessitate installation of about $800,000 worth of machine tools and equipment at the plant.

✦ ✦ ✦

PRODUCTION is scheduled to get underway on the contract by next March. About 400 employes will be required for the job. At present there are approximately 200 employed at the heater plant.

✦ ✦ ✦

1942 Wire Association Convention to Be Held at Detroit

THE National Metal Congress and Exposition for 1942 will be held at Detroit, Michigan, the week of October 12, 1942, and the Wire Association will hold its annual Convention during the same week at the same place.

✦ ✦ ✦

THE Detroit-Leland Hotel will be the headquarters of the Wire Association.

✦ ✦ ✦

AS Chairman of the Program Committee for the 1942 Meeting, the President has appointed **Mr. N. F. Melville** of the Pittsburgh Steel Company, Grant Building, Pittsburgh, Pa.

✦ ✦ ✦

ANY members of the Association having suggestions or desiring to contribute papers for next year's Convention are invited to contact Mr. Melville.

Foreman Training Service

(*Continued from Page 756*)

satisfied worker
Giving orders or directions
Placement of workers (that done by the foreman)
Cooperation with management
Gaining and holding the confidence of the workers
Influencing the workers' attitudes
Developing capacities of the workers. Instructing and training
Maintaining safe working conditions
Planning, scheduling, routing
Controlling costs
Procedures, employment, cost, production
Records and reports

✦ ✦ ✦

EACH group of foremen will, of course, elect to discuss those questions which are of greatest importance to them and the emphasis given them must depend upon the needs of the organization and the wishes of the management.

✦ ✦ ✦

Benefits Which May Be Expected

1. By analyzing existing problems the ability to analyze new problems is developed.
2. A measure of self-analysis is forced upon the individual.
3. By pooling the experience and comparing the viewpoints of the group members a broader understanding is developed.
4. Confidence in his own ability is built in the individual.
5. Coordination of interdepartmental work is improved by consideration of one another's difficulties.

✦ ✦ ✦

Steel Purchasers to File Form With Producers

PURCHASERS of steel face delay in receiving shipments if they fail to file Form PD-73 with producers, they were warned recently by the Iron and Steel Branch Office of Production Management.

✦ ✦ ✦

UNDER Steel Order M-21, it is unlawful for producers to make shipments after October 15, 1941, if the producer does not have a copy of PD-73 covering the order. A number of shipments now being held up, the Branch disclosed,

(*Please turn to Page 771*)

A Real Test for Broderick & Bascom Wire Rope... and KEYSTONE Wire

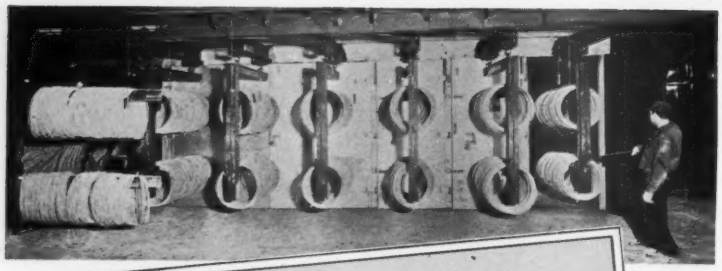
Today, thousands of miles of "Yellow Strand" wire rope — manufactured by the Brokerick & Bascom Rope Co., St. Louis — are serving efficiently in National Defense activities . . . load carrying, earth moving, well drilling, bridge suspension and countless others. For example, here are four "Yellow Strand" cables hoisting a 219-ton load (438,000 lbs.), in the process of testing a giant crane at Grand Coulee Dam. A not so obvious but very important part of this picture is the Keystone wire from which "Yellow Strand" ropes are fabricated. We are proud that this leading company chooses Keystone wire for its outstanding products.

KEYSTONE
STEEL & WIRE CO. Dept. W PEORIA, ILLINOIS

HIGH CARBON OR LOW CARBON

SAMSON SPRING WIRE
REG. U.S. PAT. OFF.
KEYSTONE STEEL & WIRE CO. PEORIA, ILL.

Bright-Tinned
Coppered
Annealed
Galvanized



..the new

ROSS WIRE BAKER

gives you all 3....

FASTER DRYING

ELIMINATES RUSTING

SMOOTH LIME COAT

An advanced method of baking that uses air at high temperature but free from the products of combustion. An economical use of heat that assures uniform temperature distribution and greatly shortens the baking cycles. Temperature is absolutely controlled. Utmost ease and comfort in loading and unloading. Requires minimum floor space. Write for full particulars.

J. O.
ROSS ENGINEERING
CORPORATION
Main Office—350 MADISON AVENUE., New York, N. Y.
CHICAGO 201 North Wells Street DETROIT 12953 Greeley Avenue
ROSS ENGINEERING OF CANADA, LIMITED, Dominion Square Building, Montreal

Steel Companies to Submit Data To OPA Under "Dislocated Tonnage" Provision

STEEL companies are being asked by the Office of Price Administration to submit data, in terms of tonnage and dollar value, on shipments of steel under the "dislocated tonnage" provisions of Price Schedule No. 6, Leon Henderson, administrator, announced recently.

✦ ✦ ✦

"DISLOCATED tonnage" means steel shipped by producers into areas not customarily served by them. Such shipments are now being required by the Office of Production Management in order to facilitate progress of the defense program. This in effect requires a modification of the basing point system used in the steel industry under which the price of steel at a given destination is ordinarily the same regardless of the mill from which it is shipped. This similarity of price is achieved by the more distant mills paying varying portions of the freight charges depending upon their distance from the customer.

✦ ✦ ✦

SUCH unusual shipments of steel as required by the defense program would ordinarily require some mills to pay an excessive amount in freight on shipments to distant points. In order to meet this situation Price Schedule No. 6 was revised by OPA on June 20 to permit the mills to pass on to customers a portion of the freight charge on such "dislocated tonnage" shipped to distant points. OPA intended that this provision should be used only to relieve mills from paying excessive freight charges on such shipments. There is some indication that the provision has been used to evade the "ceiling" in the Schedule by applying it to ordinary shipments of steel.

✦ ✦ ✦

THE information requested will be used in studying the extent to which individual companies have made use of the "dislocated tonnage" provision.

New Appeal Form Issued for Hardship Clause of Copper Conservation Order M-9-c

DONALD M. NELSON, Director of Priorities, today announced that a special appeal form has been provided for manufacturers whose operations come under the special hardship clause of Copper Conservation Order M-9-c.

✦ ✦ ✦

THE new form, PD-167, may be obtained from any Priorities Division Field Office or by writing to the Priorities Division in Washington. Any appeal made must be filed on this form and must be mailed to the Director of Priorities, Reference M-9-c, Washington, D. C.

✦ ✦ ✦

MOST of the hardships arising under the order are unavoidable and are made necessary because of the serious copper shortage and the fact that available copper must be used for defense purposes.

✦ ✦ ✦

IN considering appeals, the Priorities Division will take account of such factors as sudden and harmful dislocations of employment and freezing of inventories which are in process and which would become useless if the process were not completed.

✦ ✦ ✦

IN announcing the new form, Mr. Nelson emphasized:

(1) No appeal will be considered unless it is made on the form provided.

(2) The form should be used only in cases of especially serious hardship.

✦ ✦ ✦

Spring Manufacturers Association Elects Officers

A MEETING of the Spring Manufacturers Association was held at the Hotel Commodore, New York, N. Y., on Wednesday, October 22nd. At the luncheon meeting, **Mr. Harry L. Coe,** Industrial Consultant for the National Association of Manufacturers, spoke to the members on the National Defense Program with particular emphasis on priorities and their probable effect on spring manufacturers in the immediate future.

FOLLOWING the Luncheon Meeting, the business meeting was held, and the following directors were elected:

L. D. Adams, Barnes-Gibson-Raymond, Inc., Detroit, Mich.

Harold B. Reid, Wallace Barnes Co., Bristol, Conn.

James W. Campbell, Cleveland Wire Spring Co., Cleveland, Ohio.

E. J. Byrnes, Wickwire-Spencer Steel Co., New York, N. Y.

Edward Miller, Miller & Van Winkle, Paterson, N. J.

H. F. Plagenz, Cuyahoga Spring Co., Cleveland, Ohio.

A. J. Hess, American Steel & Wire Co., Chicago, Ill.

L. C. Humason, Humason Mfg. Co., Forestville, Conn.

J. F. Kamen, Chicago Coil Spring Co., Chicago, Ill.

✦ ✦ ✦

IMMEDIATELY following the general meeting the directors met and elected the following officers for the ensuing year:

President: James W. Campbell.

Vice-President: Harold B. Reid.

Secretary and Treasurer: Jeffry J. Hammel.

FARREL-SYKES GEARS

for Rugged, Smooth Running

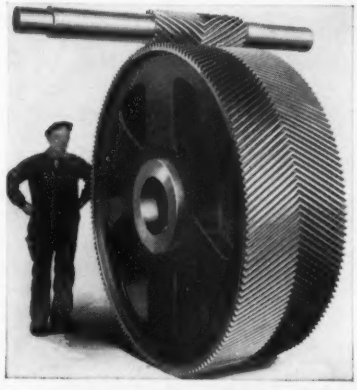
ROLLING MILL DRIVES

Farrel-Sykes Gears for rolling mill drives meet today's defense production demands for ruggedness, for ability to withstand the shocks, stresses and wear incident to high speeds and heavy loads, and for efficient, trouble-free performance.

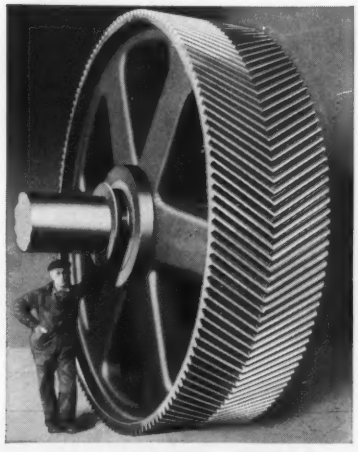
With the greater bearing surface provided by their continuous herringbone teeth, Farrel-Sykes Gears are stronger and better able to carry heavier loads at high speed. In consequence, they offer the advantages of reduced weight and size for a given load requirement, together with exceptionally quiet, smooth-running operation.

Due to the interlacing and creeping engagement of their teeth and inclined line of pressure, Farrel-Sykes Gears are better able to withstand wear. And their involute profile and correct tooth action are maintained as long as the gears last. Furthermore, their opposed helices balance and absorb axial thrust within the gear member, eliminating harmful thrust loads and resultant stresses on other parts of the machinery.

These are but some of the many features that account for the long-lived, economical performance of Farrel-Sykes Gears for rolling mill drives. Farrel engineers are always available for consultation on gear problems.



High ratio gears for a rolling mill drive. In the limited space available only continuous tooth herringbone gears were able to meet the requirements.



Continuous tooth herringbone gear for rolling mill drive, 5,000 HP, weight 61,700 lbs., 145″ diameter, 145 teeth, 1 DP, 40″ face.

FARREL SYKES GEARS

FARREL-BIRMINGHAM COMPANY, Inc.

ANSONIA, CONN. - - - - - BUFFALO, N. Y.

The Gear with a Backbone

A Review of Recent Wire Patents

No. 2,257,837, COIL WINDING MACHINE, patented October 7, 1941 by James S. Burge and Otis K. Gray, Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich., a corporation of Delaware.

A flat anchoring strip of flexible material is provided, adapted to be formed around the arbor and retained by the winding of wire thereon, having means for attachment thereto of wires leading from supply spools.

✦ ✦ ✦

No. 2,257,993, METHOD OF MANUFACTURING WIRE SCREENS, patented October 7, 1941 by Leonard A. Young, Detroit, Mich.

In this method, round wire is flattened, and a blank formed of it and round wires (warp), the blank is then pressed to flatten all the wires, so that the warp and weft wires are of rectangular cross section, integrally united in a common plane.

✦ ✦ ✦

No. 2,258,218, METHYL SILICONES AND RELATED PRODUCTS, patented October 7, 1941 by Eugene G. Rochow, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York.

These patents relate to dielectric material adapted as covering for conductor wire.

✦ ✦ ✦

No. 2,258,219, HALOGENATED ARYL SILICONES, patented October 7, 1941 by Eugene G. Rochow, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York.

Complete Descriptions and Drawings of Patents May Be Had for 25 cents. Address, Wire & Wire Products, 300 Main St., Stamford, Conn.

These patents relate to dielectric material adapted as covering for conductor wire.

✦ ✦ ✦

No. 2,258,220, RESINOUS MATERIALS AND INSULATED CONDUCTORS AND OTHER PRODUCTS UTILIZING THE SAME, patented October 7, 1941 by Eugene G. Rochow, West Albany, N. Y., assignor to General Electric Company, a corporation of New York.

These patents relate to dielectric material adapted as covering for conductor wire.

✦ ✦ ✦

No. 2,258,221, AROXY SILICONES AND INSULATED CONDUCTORS AND OTHER PRODUCTS UTILIZING THE SAME, patented October 7, 1941 by Eugene G. Rochow, West Albany, N. Y., assignor to General Electric Company, a corporation of New York.

These patents relate to dielectric material adapted as covering for conductor wire.

✦ ✦ ✦

No. 2,258,222, METHYL ARYL SILICONES AND INSULATED CONDUCTORS AND OTHER PRODUCTS UTILIZING THE SAME, patented October 7, 1941 by Eugene G. Rochow, West Albany, N. Y., assignor to General Electric Company, a corporation of New York.

These patents relate to dielectric material adapted as covering for conductor wire.

✦ ✦ ✦

No. 2,258,255, ELECTRICAL INSULATION, patented October 7, 1941 by Wallace Bentley MacKenzie, New York, N. Y., assignor to Phelps Dodge Copper Products Corporation, New York, N. Y., a corporation of Delaware.

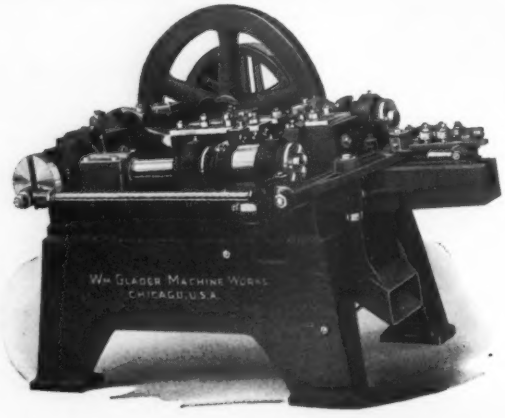
For use when the conductor passes through hot water or steam, the inventor provides an insulation which is the product of vulcanizing a mixture consisting essentially of by weight, 25 parts of mechanically plasticized rubber, 15 parts of polyisobutylene, 55.5 parts of zinc oxide in the form of a fine powder, one part of polymerized trimethyl dihydroquinoline, one part of carbon black, 0.9 parts of stearic acid, 1.5 parts of tetra methyl thiuram mono sulfide, 0.1 parts sulfur milled and formed prior to vulcanization.

✦ ✦ ✦

No. 2,258,326, SCREWHEAD, patented October 7, 1941 by Grant J. Holt, Melrose, Mass.

In addition to the conventional screwdriver slot, the head also has a pair of radial slots at right angles to the dia-

GLADER WIRE NAIL MACHINE SCORES AGAIN



WM. GLADER MACHINE WORKS

210 N. Racine Ave. Chicago, Illinois

A new Wire Mill under construction in the State of Texas will install GLADER WIRE NAIL machines 100%.

The production figures on common nails shown below, are guaranteed.

SIZE MACH.	SIZE WIRE	MAX. LENGTH OF WIRE	NUMBER OF NAILS PER MIN.	CAP. IN POUNDS PER HR.
#00A	#16	1⅛"	700	37.2
#00	#14	1¼"	550	55
#0	#12	1¾"	450	89
#1	#10	2½"	400	192
#2	#8	3½"	325	310
#3	#4	5"	225	523
#4	#1	7"	190	622
#4s	5/16"	9"	175	1155
#5	⅜"	12"	160	2400

This high output and economical operation account for the GLADER machine being accepted as standard equipment in all recent installations.

metrical slot, the bottom of each radial slot sloping downwardly and outwardly from approximately the top surface of the head to a point below the level of the bottom of the diametrical slot.

✦ ✦ ✦

No. 2,258,930, METAL DRAWING PROCESS, patented October 14, 1941 by Rudolf Haefner, Frankfort-on-the-Main-Romerstadt, and Max Schunck, Oberursel, near Frankfort-on-the-Main, Germany.

The process comprises applying to metal to be drawn a coating composition comprising a solution of a non-sulphurized bitumen of 20° to 100° Celsius softening point in about an equal weight of a volatile solvent for the bitumen, and after evaporation of volatile solvent from the applied composition, subjecting the so treated metal to a drawing operation.

✦ ✦ ✦

No. 2,259,400, FLAW DETECTION, patented October 14, 1941 by Robert C. Switzer, Cleveland, Ohio.

For detecting flaws in a metallic body, the inventor, treats the body with a primary agent capable of penetrating the flaws, removal of the agent from the external body surfaces, and treatment of the body with a second agent reactive with the primary agent to form a product in the proximity of flaw surface outlets differing from the body surfaces in response to ultra-violet radiations. There are 13 claims.

✦ ✦ ✦

Reissue No. 21,926, HIGH TENSION RUBBER INSULATED CABLE, patented October 21, 1941 by Elisabeth Bormann, Berlin-Charlottenburg, Germany, assignor to Siemens-Schuckertwerke Aktiengesellschaft, Berlin-Siemensstadt, Germany, a corporation of Germany.

A layer of less electrical resistance than rubber is adjacent to the conductor and a metal sheath, this layer, including substance of the electrical conducting properties of graphite and soot, to prevent ionization of gases prevailing at the boundary between the insulation and the conductor and sheath respectively.

✦ ✦ ✦

No. 2,259,640, THREAD FORMING APPARATUS, patented October 21, 1941 by Joseph H. Hoern, Saginaw, Mich., assignor to Eaton Manufacturing Company, Cleveland, Ohio, a corporation of Ohio.

Two die sections are provided for forming a pair of series of mis-matched threads upon an object, each section having normally matched thread forming means thereon, the sections being arranged with the thread forming means of one in mis-matched relation with the thread forming means of the other.

✦ ✦ ✦

No. 2,260,024, INSULATED ELECTRICAL CONDUCTOR, patented October 21, 1941 by Ralph W. Hall and Henry A. Smith, Fort Wayne, Ind., assignors to General Electric Company, a corporation of New York.

In this cable the insulation comprises fibre glass associated with a composition comprising a super-polyamide modified with a synthetic resin.

✦ ✦ ✦

No. 2,260,455, WIRE DRAWING, patented October 28, 1941 by Charles Richard Horwedel, Lakewood, Ohio, assignor to The American Steel and Wire Company of New Jersey, a corporation of New Jersey.

For drawing wire in a continuous wet-drawing machine, this inventor coats the wire with wax prior to its entering the dies of the machine, the wax having a melting temperature resulting in its being successively melted as it draws through the dies of the machine and successively hardened by the liquid used by the machine to bathe the wire and dies during the travel of the wire from die to die.

✦ ✦ ✦

No. 2,260,479, ADJUSTABLE DRAWING DIE, patented October 28, 1941 by Ernest C. Picking, Coventry, England, assignor to Alfred Herbert Limited, Edgwick, Coventry, England.

This die is of the adjustable polygonal class, and individual adjustment of the associated die sections may be effected.

✦ ✦ ✦

No. 2,260,606, COILED SPRING, patented October 28, 1941 by Howard Hoy Clark, Detroit, Mich., assignor to Eaton Manufacturing Company, Cleveland, Ohio, a corporation of Ohio.

Three series of wire coils make up this helical wire spring, one series providing a seating portion for the spring.

✦ ✦ ✦

No. 2,260,627, MATTRESS SPRING, patented October 28, 1941 by Abraham Krakauer, Brooklyn, N. Y., assignor to Kay Manufacturing Corporation, Brooklyn, N. Y., a corporation of New York.

The assembly includes a row of marginal wire coil springs each having end coils and smaller intermediate coils, a reentrant portion on each of the end coils constituting stop means for preventing movement of any of the intermediate coils vertically past the end coils, the coils of each spring being so arranged that a vertical plane tangent to the extremities of the reentrant portion is substantially tangent to the intermediate coils, and a helical spring wound

(Please turn to Page 766)

Why suffer costly production delays caused by wire? Callite fine wires, drawn to close tolerance, uniform temper and finish, are thoroughly dependable. Callite's high standards of excellence, and years of wire drawing experience insure this. And Callite's wide range of fine wires down to .001" in size includes a grade of Callite wire suitable for every application. If uninterrupted production is your primary concern, as it is in so many plants today, consult Callite's technical staff.

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branch offices: Chicago, Ill. — Cleveland, O.

CALLITE FINE WIRE
is furnished in these metals and alloys

Aluminum
Beryllium-copper
Stainless steel
Phosphor-bronze
Silver
Silver bullion wire
Nickel alloys
Brush wire
Monel
Brass — all grades
Commercial bronze
Nickel-silver alloys
Special alloys

CALLITE TUNGSTEN CORPORATION CT

Callite Wires
A FINE WIRE FOR EVERY NEED

A Review of Recent Wire Patents

(Continued from Page 765)

about those parts of the end coils of each marginal spring adjacent its re-entrant portion and also wound about part of the next adjacent intermediate coil of all the springs in the row.

✦ ✦ ✦

No. 2,260,761, ELECTRIC CORD OR CABLE, patented October 28, 1941 by Howard M. Wilkoff, Worcester, Mass., assignor to The American Steel and Wire Company of New Jersey, a corporation of New Jersey.

A flameproof synthetic resin sheath covers the wire conductor, and a braided jacket is over the sheath, the latter projecting through the interstices of the jacket to a sufficient extent to constitute protuberances protecting the braid jacket from flaming, the jacket and the protuberances being exposed to view in the normal use of the cord or cable.

✦ ✦ ✦

No. 2,260,783, WIRE - CLEANING MACHINE, patented October 28, 1941 by Edward W. Morley, Huntington Park, California.

The machine employs gangs of brushes for cleaning the wire, with a supporting arbor for each gang, carried in bearings permitting the gangs to be converged toward the axis of the wire.

✦ ✦ ✦

Simple Methods of Analyzing Plating Solutions

A NEW edition (the sixth) of a forty-eight page booklet giving in detail, simple and practical methods of analyzing plating solutions has been published by the **Hanson-Van Winkle-Munning Co.**, Matawan, N. J., manufacturers of electroplating equipment and supplies. This work has now been in circulation since 1930 and has become one of the standard textbooks in its field. The methods recommended are simple and highly practical in character, and can be applied by men without extensive chemical training. A number of new features appear in this edition which are noted below.

✦ ✦ ✦

THE contents of the book include descriptions of the principles involved in analysis, the use of apparatus, the method of sampling a plating solution and step-by-step methods for the complete analysis of the following solutions:

Nickel
Black Nickel
Silver
Sulphate Copper
Cyanide Copper
Rochelle Copper
Cyanide Brass
Cyanide Gold
Cyanide Zinc
Sulphate Zinc
Chromic Acid
Alkaline Tin
Cyanide Cadmium
H-VW-M Bright Cobalt Nickel
H-VW-M Semi-Bright Nickel

✦ ✦ ✦

THE book is thoroughly indexed making it easy to find the particular analysis desired.

✦ ✦ ✦

FULL lists are given of the necessary equipment and chemicals required for the analytical work. The book contains a number of valuable reference tables covering: component parts in per cent by weight, of salts commonly used in electroplating; densities of commercial acids; electro-motive series; sodium cyanide required to dissolve metal salts; acid and alkali actions on metals; electro-chemical equivalents.

✦ ✦ ✦

A NEW Section is included, Electrochemical Data for the Important Metals, which gives the usual cathode efficiencies; average cathode current densities; ampere

Designed to meet defense demands in the production of STEEL WIRE

Syncro B.C.S.-14 Minimum slip, continuous wet wire drawing machine.

- Higher speeds • Lower maintenance
- For high carbon (better physicals)
- For low carbon (improved quality)
- Extremely flexible • Coils or spools
- Change gearing provides numerous finishing speeds with single speed A. C. main motor.

SYNCRO MACHINE COMPANY

Rahway, New Jersey — McCormick Bldg., Chicago

Represented in Canada by Canadian Elevator Equipment Co., Ltd., Toronto

minutes per sq. ft. to deposit 0.001" at the usual efficiency; the time in minutes required to deposit 0.0001" at the average cathode current density and the usual cathode efficiency; all of these data for a number of the most important plating solutions. A detailed description is given, with examples, of methods of determining the thickness of deposits at various plating times and current densities. Another useful table gives the factors for the conversion of weights of metals into thickness and vice versa.

✦ ✦ ✦

COPIES of this book are obtainable on request from the Hanson-Van Winkle-Munning Co., Matawan, N. J. It is noteworthy that this company also places its laboratory at the full service of all electroplaters for instruction and consultation.

✦ ✦ ✦

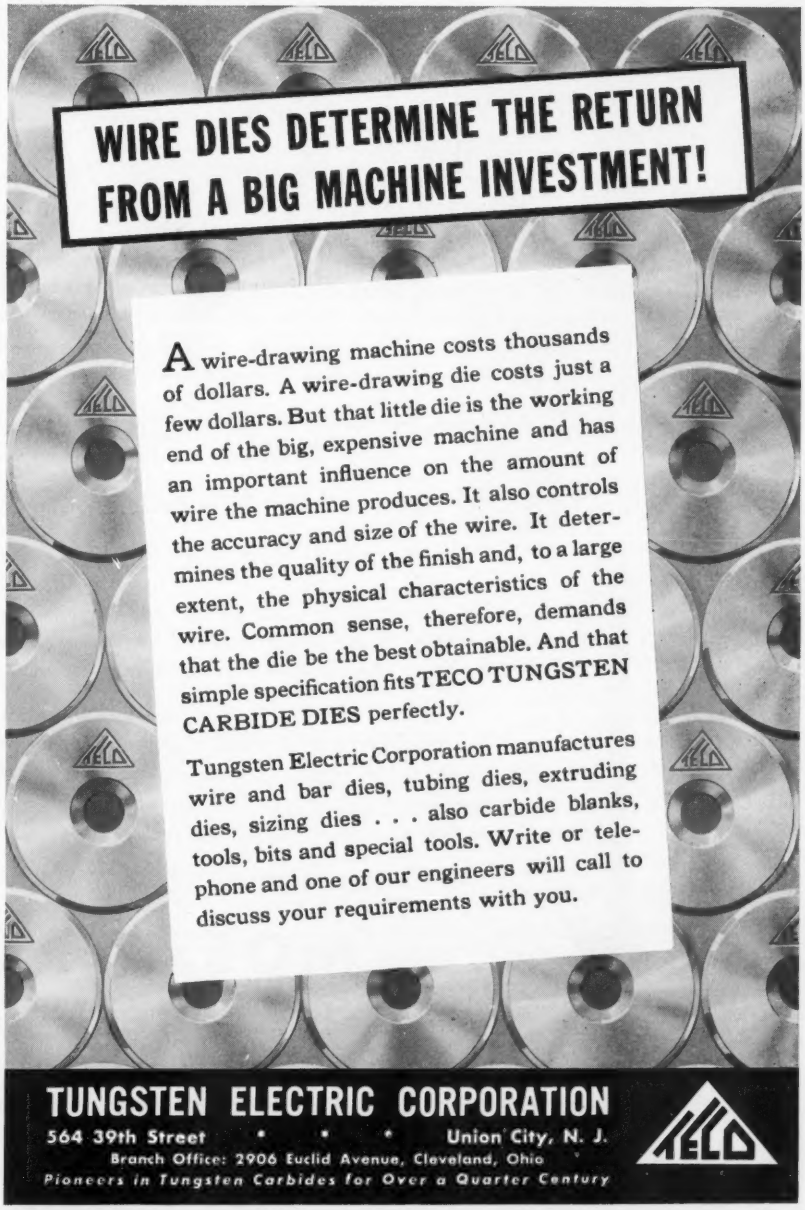
War Department Procurement In the Emergency

(*Continued from Page 750*)

struction, new facilities and supplies, has been a huge undertaking. Procurement of airplanes in actual numbers has been many times that of any previous year. Record-breaking orders have been placed for items for all arms and services. A construction program, including facilities and command construction valued at several billions of dollars, has been initiated and in large part completed. New shelter and facilities have been provided to take care of great numbers of new troops. Contracts for new manufacturing facilities for aircraft, tanks, ammunition, chemicals and explosives, anti-aircraft, anti-tank and other artillery weapons, and other items, have been let to the extent of well over a billion dollars. Orders have been placed for large quantities of trucks and combat vehicles, artillery shell and bombs, small arms and small arms ammunition, gas masks, searchlights, radio sets for airplanes, tanks and ground use and other communications equipment.

✦ ✦ ✦

IN conclusion let me say that it has been a pleasure to be present at this meeting. I wish to thank the Association on behalf of the Under Secretary, and also personally, for your willing and helpful cooperation with the War Department. We are now procuring quantities of materials from some of your mills for the use of other nations on the battlefields of Europe and Asia. Should it become necessary to obtain still greater quantities for the use of our own armies, which I hope may never need to expend those materials on the field of battle, I am sure that we may count on your industry and that our confidence will not be misplaced.


WIRE DIES DETERMINE THE RETURN FROM A BIG MACHINE INVESTMENT!
A wire-drawing machine costs thousands of dollars. A wire-drawing die costs just a few dollars. But that little die is the working end of the big, expensive machine and has an important influence on the amount of wire the machine produces. It also controls the accuracy and size of the wire. It determines the quality of the finish and, to a large extent, the physical characteristics of the wire. Common sense, therefore, demands that the die be the best obtainable. And that simple specification fits TECO TUNGSTEN CARBIDE DIES perfectly.
Tungsten Electric Corporation manufactures wire and bar dies, tubing dies, extruding dies, sizing dies . . . also carbide blanks, tools, bits and special tools. Write or telephone and one of our engineers will call to discuss your requirements with you.
TUNGSTEN ELECTRIC CORPORATION
564 39th Street • • • Union City, N. J.
Branch Office: 2906 Euclid Avenue, Cleveland, Ohio
Pioneers in Tungsten Carbides for Over a Quarter Century
TELCO

A. S. T. M. Standards on Electrical-Heating and Resistance Alloys

THIS new compilation issued by the **American Society for Testing Materials** gives in convenient form all of the test methods and specifications developed through the work of **A.S.T.M.'s** Committee B-4 covering electrical-heating and electrical-resistance materials, thermostat metals, materials for lamps and radio tubes, and structural and electrical-resistor materials for furnaces.

✦ ✦ ✦

IN addition to these standards two extensive technical papers are included, one by **S. R. Hood,** Chief Engineer, W. M. Chase Co., on **"Thermostat Metal"** which discusses expansion coefficient matters, the design of devices depending upon thermostat metal, strength requirements of thermostat alloys, and bond, hardness, and electrical resistivity characteristics. Commercial classifications are discussed and also standard tests as a basis for purchase specifications.

✦ ✦ ✦

ALSO included in the first 500 copies of the compilation is the extensive paper prepared by **W. F. Roeser and H. T. Wensel** of the National Bureau of Standards on **"Methods of Testing Thermocouples and Thermocouple Materials."** Following general considerations with reference to temperature scale, homogeneity, annealing, and instruments, there is a discussion on calibration at fixed points, and by comparison methods. Methods of interpolating between calibration points are covered for various couples. Other portions of the paper cover reference-junction corrections and testing of thermocouple materials.

✦ ✦ ✦

STANDARDIZED tests for electrical resistance alloys cover resistivity, thermoelectric power, temperature-resistance constants. For electrical heating alloys there are tests on resistance change with temperature and accelerated life test. Short- and long-time high-temperature tension tests, and methods of determining linear expansion are among the tests for heat-resisting alloys. Seven standards cover materials for radio tubes and lamps and there are two specifications for electrical heating alloys. Standard tests for thermostat metals are given.

✦ ✦ ✦

COPIES of this 110-page publication in heavy paper cover can be obtained from **A.S.T.M.** Headquarters, 260 S. Broad St., Philadelphia, Pa., at $1.25 per copy. For 10 to 49 copies, $1.00 each.

✦ ✦ ✦

New Plant for Cleveland Wire Spring Co.

CLEVELAND Wire Spring Company, Harvard Ave., and East 49th St., Cleveland, Ohio, plans expenditure of $75,000 or more for construction of a modern brick, steel and concrete manufacturing plant here. **J. W. Campbell** is president and treasurer.

Patented
2 BX Mossberg Carrier

MOSSPEED BRAIDER CARRIERS

Represent

Improved Braiding at Lower Costs

The patented MOSSPEED spring tension take-up makes it possible to increase the speed of the maypole-type braiding machine. An effective increase of 80% being obtained in many cases.

The new (x) type MOSSPEED high speed carrier permits the rapid changing of tension springs making this an ideal carrier for braiding all kinds of yarn (cotton, rayon, asbestos, jute), in addition to fine strands of copper wire.

Consult our engineers regarding your braiding problems.

2 SE
Copholder

Complete line of both MOSSPEED carriers and metal copholders for all sizes and makes of maypole type braiding machines.

MOSSBERG
Pressed Steel Corp.
18 West Street
Attleboro, Massachusetts, U. S. A.
Ross Whitehead & Co., Ltd., Montreal and Toronto, Canada.
James Day (Machinery), Ltd., The Grange, Whetstone, Nr. Leicester, England

Variable Speed Control

A NEW V belt variable speed transmission known as the JFS-CUB is being introduced to industry by Standard Transmission Equipment Company of 416 W. 8th Street, Los Angeles, California.

✦ ✦ ✦

THIS newest addition to the line of V belt speed controls manufactured by the Company, is especially designed for all "A" section V belt applications and for speed ranges up to 3.3-1. Smooth sided pulleys are used rather than the inter-locking type. Among the advantages claimed are: the patented positive belt alignment feature which makes possible the mounting of the CUB in any and every position without impairing function or throwing belts out of alignment; machined and balanced cast iron construction, forced lubrication of the special bronze bearings on which the pulleys rotate; free-end pulley spindle to permit easy installation of belts; both pulleys on one side of pivotal mechanism which permits motor pulley and driven pulley to be almost directly in line with each other; etc.

THIS transmission is being introduced as a low cost speed control to make possible application on machines that never before could have the advantages of infinite speed selection because of expense. The CUB will transmit full capacity of "A" section V belts, and can be used with all machines now using that size. The control comes complete ready to install for $16.50 f.o.b. Los Angeles, with a shipping weight of 12 lbs.

✦ ✦ ✦

ADDITIONAL information is available on request.

✦ ✦ ✦

Union Sues Wire Company For $500,000

A STRIKING union at the **Midland Wire Corporation** plant at Tiffin, O., has sued the company for a half million dollars and asked an injunction to restrain Midland from moving the plant out of the county.

✦ ✦ ✦

LOCAL No. B-1270 of the International Brotherhood of Electric Workers, A. F. of L., whose members have been on strike for two weeks, filed the suit. It charged that the company refused to bargain collectively. The plant employs 135 persons, about half of them women.

Control

GETS RESULTS in SOLDERING, TOO... in Wire Products Production

Control of both flux and alloy—as to both quality and quantity—the *positive control* that you get with Kester Cored Solders—is essential to perfect results in every soldering operation in the manufacture of wire products.

Production is smoother with Kester Cored Solders, due to proper balance of self-contained flux and pure, virgin metal alloy. Hit-and-miss soldering is eliminated.

Results are *permanent* because Kester Cored Solders—due to purity of flux and alloy—resist bending, shocks, vibration, contraction and expansion.

Kester Cored Solders are available to the wire products industry in a wide range of fluxes, alloys, core-sizes and wire-sizes. Kester engineers will gladly help you determine the combination best adapted to any operation. Consult them without obligation!

KESTER FLUXES If your operation calls for the use of a separate flux, specify KESTER.

Viscosiformed Paste, Trichloron Salts, Soldering Liquids, Superchloron Tinning Blocks. Same Quality Standard — the BEST — for 42 years.

KESTER SOLDER COMPANY

Eastern Plant: Newark, N. J. | 4258 WRIGHTWOOD AVENUE CHICAGO, ILLINOIS | Canadian Plant: Brantford, Ont.

KESTER CORED SOLDERS
STANDARD FOR INDUSTRY

Handbooks on Priority and Price Regulations

TWO important defense handbooks, one summarizing all price and priority regulations to date and the other listing every product subject to export control, have just been published by the **N. Y. Journal of Commerce.**

✦ ✦ ✦

ALL government and voluntary price controls and priorities are brought up to date in the Price and Priority Digest. In addition to giving the status of nearly 200 commodities and commodity groups, prospects for civilian allotments are also reviewed for quick reference on part of the purchasing executive.

✦ ✦ ✦

THE new edition of the Export Control List embraces 32 pages of product listings with all licensing and destination symbols posted next to each item. It is the fifth revision of what has become recognized as the most authentic export guide available today.

When you buy

SPOOLS and REELS

consider the advantages "American" offers

✓ The skill and experience to make them right.

✓ The capacity to meet your needs.

We have the tools, the dies, and all the modern equipment necessary to produce pressed-steel spools and reels skillfully, quickly, and economically.

Widely used in the wire industry for production operations and shipping, "American" Pressed-Steel Spools are light, clean, and sturdy. They will not break, chip, crack, or warp.

"American" Pressed-Steel Reels are equally indestructible. They meet every requirement of braiding, drawing, annealing, vulcanizing, and shipping.

The services of our Engineering Department are available, without obligation. Let us quote on your requirements.

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Chicago, Ill.

AMERICAN
Pressed-Steel
SPOOLS AND REELS

BOTH supplements have been published in handy tabloid form and may be had at 10 cents each from The N. Y. Journal of Commerce, 63 Park Row, New York. A limited supply of O.P.M. and O.P.A. order texts, as published in the columns of the Journal of Commerce, is also available at the same price.

✦ ✦ ✦

Carbide Die Service Boosts Mill Tonnage

(*Continued from Page 746*)

relief in small dies, boron carbide may be used. Rough drilling requires either Carborundum powder (usually 220 grit), or boron carbide. For polishing the carbide die, diamond powder should be used.

✦ ✦ ✦

Shaped Dies

THE latest development in carbide die equipment has been the introduction of complete equipment permitting the manufacture of shaped dies in the die room of a wire mill. This equipment (see Fig. 7) consists of only four units—a special shaper for making laps, a die shaping machine for putting in the approach, bell, and back relief angles, and a die sizing machine for putting in the bearing and final sizing. The fourth unit is a hand lapper for final polish.

✦ ✦ ✦

Fig. 7.

✦ ✦ ✦ ✦

PRODUCTION of shaped dies by the mill itself has been made possible by the introduction of cored shaped dies at a cost but little more than for round holed cored dies. The equipment is such as to enable rapid training of the average die man to produce finished shaped dies, and where such dies are required in reasonable quantities, the use of such equipment results in sizeable savings in initial and refinishing costs on shaped dies. With this equipment,

incidentally, it is possible also to produce many shaped dies from round hole dies—especially in the smaller sizes.

✦ ✦ ✦

G-E Mine Telephone Cable

A NEW mine telephone cable with the mechanical and electrical strength of large cables but a diameter of slightly over ¼ inch has been announced by the General Electric Company. This twisted-pair, No. 14 Awg solid cable is designed for mine telephone service where induced currents and cross talk must be reduced to the minimum.

✦ ✦ ✦

VERSATOL insulation makes the cable heat- and moisture-resistant. A tellurium-compounded rubber jacket insures protection against mine waters and soil acids. Breakage is reduced by use of hard-drawn tinned-copper conductors, with one conductor ribbed for easy identification.

THE new cable can be run through water without ill effects, can be hung on pegs, or buried in the ground. Its light weight (80 lb. per 1000 ft.) makes it easy to transport to any desired location.

✦ ✦ ✦

Outstanding Personalities of the Wire Industry

(*Continued from Page 757*)

pany employee for the past seventeen years, vice-president and general manager. **W. H. Blodgett** continues to head the sales department.

✦ ✦ ✦

MICHIGAN WIRE CLOTH is modernizing and expanding plant and equipment to meet the increased defense demand for its products. Pioneers in arresters, filters, screens, strainers, and wire cloths—Michigan Wire Cloth Company has long served many industries such as agricultural, railroads, petroleum, brewing, chemical sand and gravel. In the automotive and refrigeration fields, its strainers receive outstanding recognition, but more important right now, it is the world's largest manufacturer of aircraft fuel strainers.

✦ ✦ ✦

"OUR expanded defense activities in the aircraft, ammunition, and motor defense fields will necessitate representation beyond our present coverage in Chicago, Cincinnati, Los Angeles, New York, Pittsburgh, and St. Louis," said Bull.

✦ ✦ ✦

Steel Purchasers to File Form With Producers

(*Continued from Page 761*)

pending receipt of forms by producers.

✦ ✦ ✦

FORM PD-73 provides for complete information by the customer as to the classification of steel ordered, its ultimate use, completion date of contract for which the material is required, and other pertinent data.

THE WATSON MACHINE COMPANY

ESTABLISHED 1845

PATERSON, NEW JERSEY, U. S. A.

ELECTRICAL WIRE AND CABLE AND WIRE ROPE MACHINERY

Stranders
Bunchers
Cablers
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Armor. Machines
Tapers
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Serving Heads
Compound Tanks
Saturating Tanks
Powderers and Chalkers
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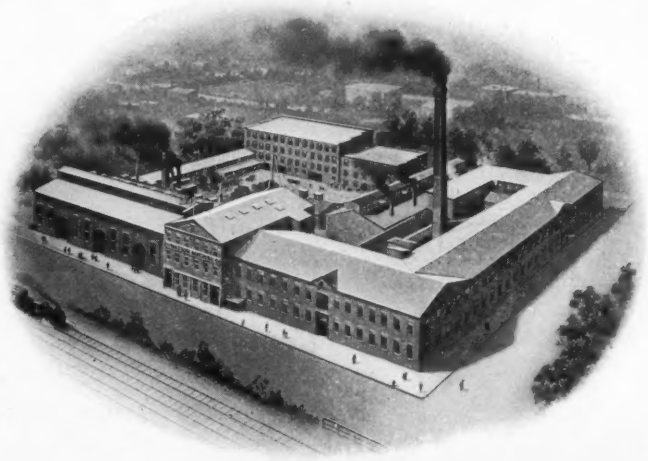


Let-offs
Gang-Spoolers
Re-winders
Capstan Takeups
Continuous Takeups
Heavy-Duty Takeups
Traverses
Measuring Mach.
Testing Mach.
Vulcanizers
Polishers
Reel Crutches

MEAS. MACH., TRAVERSES, REEL CRUTCHES, BUNCHERS, SMALL POWDERERS, ETC.—USUALLY CARRIED IN STOCK

LITERATURE AVAILABLE ON ALL LISTED UNITS

Supply Priorities and Allocations Board

THE Supply Priorities and Allocations Board has announced that it has requested the **Office of Production Management** to develop an allocation system for steel.

✦ ✦ ✦

SUBSTANTIAL steps in that direction have already been taken in the handling of orders for steel plate, and the system has also been in use for some time in regard to pig iron.

✦ ✦ ✦

EXTENSION of this policy throughout the industry means that distribution of steel through priorities ratings will gradually be replaced by direct allocations, with emphasis being placed first on those types of steel most in demand for defense purposes.

✦ ✦ ✦

THE system will be devoted through joint operation by several groups within **OPM** — principally the Division of Priorities, the Division of Civilian Supply and the Iron and Steel Branch of the Division of Materials. It was emphasized that because of the size and complexity of the task it would take some time and a considerable staff to work out the respective allocations of the numerous varieties of steel products, and details regarding the precise manner in which the plan will be put into effect are still to be worked out.

✦ ✦ ✦

SPAB's action was taken after Army and Navy officials had pointed out that increasing problems in connection with deliveries of structural steel, nickel steel, high-speed steel, tool steel and steel plate for defense purposes could no longer be solved properly through the priorities system alone.

✦ ✦ ✦

PRIMARY purpose of the step, of course, is to assure distribution of the available supply where it will do the most good. Operation of the existing priorities system does not provide an adequate check against hoarding and the accumulation of excessive inventories. Furthermore, under priorities there is no simple way by which the armed services and civilian consumers may be assured that the nation's over-all steel production will be properly proportioned into the types of steel which are in greatest demand.

✦ ✦ ✦

THIS balancing of production would be achieved with service requirements in mind, so that the Army and Navy would be assured of an adequate flow of steel needed for defense. The allocation then could proceed industry by industry and product by product, in order that the nation's expanding steel capacity could be properly fitted to its expanding needs for steel.

✦ ✦ ✦

DEFENSE authorities first encountered difficulties in regard to steel in January of this year, when there developed some delay in the delivery of structural steel for defense plants. Shortly

(*Please turn to Page 775*)

YOU COULD CIRCLE THE U.S. COAST LINE 250 TIMES

• **RODINE** ***saved steel enough***

to make more than a million miles of barbed wire

You could barricade the U. S. coast, circle the Equator more than 50 times, with barbed wire that could have been made from the steel saved by *Rodine* last year . . . steel which might have been lost by acid attack in pickling. *Rodine*, in the world's pickling baths, saves labor, acid, reduces brittleness, blistering, corrosion, eliminates formation and escape of acid fumes. For 20 years, ACP products have served by *saving* and *protecting* steel. Adequate stocks are available. Write for Bulletin No. 13.

CUPRODINE is the ACP granular material used in solution for producing a fine bright copper coating on steel by a simple immersion process. Ask for Bulletin No. 13-9.

RODINE Saves STEEL

AMERICAN CHEMICAL PAINT CO.

MAIN OFFICE AND WORKS
AMBLER • • • PENNA.

CHEMICALS ACP PROCESSES

DETROIT, MICH., 6239 Palmer Ave., E.
CANADIAN BRANCH
WALKERVILLE • • • ONT.

New Automatic Welding Gantry

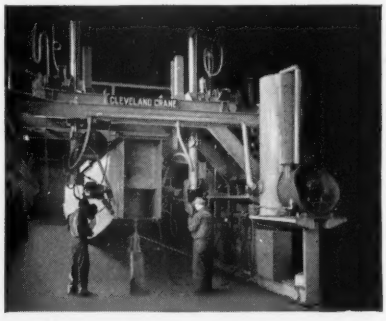
THE Cleveland Crane & Engineering Company, Wickliffe, Ohio, has designed, built and recently installed in their Structural Department, a new automatic welding gantry for making long welds of 1'-0" to 120'-0" continuously and automatically. This equipment replaces the world's first welding gantry, which also was conceived and constructed by Cleveland Crane.

✦ ✦ ✦

THE new gantry has many novel features which make possible better welds, easier operation and improved working conditions for the operators.

✦ ✦ ✦

THE machine can be traveled at any speed from 30 to 148 feet per hour to suit various size welds and materials. As the gantry travels, the welding rod is fed precisely and automatically to both sides of the work. In the welding heads a tape is wrapped around the rod to shield the arcs. By welding both sides of the work at the same time, the welding heat is distributed evenly, thereby neutralizing stresses and minimizing distortions that otherwise would take place, and thus produce straight accurate girders.



THE welding heads are raised or lowered by individual push-button-controlled motorized drives that are mounted on separate hand-propelled trolleys which may be adjusted to suit the width of the work.

✦ ✦ ✦

LOCATED on a platform in the leg of the gantry are a motor-generator set for actuating the

(*Please turn to Page 778*)

3 IMPORTANT FEATURES OF
SMIT DIAMOND POWDERS

1. FINE RAW MATERIAL . . . Made from new fine bortz, reduced to small, sharp, uniform particles by a careful crushing and separation process.

2. SHARP CUTTING GRAINS . . . Finely ground in a new way, the fragments are of relatively substantial thickness, with a maximum of sharp cutting edges.

3. UNIFORM SIZE . . . SMIT DIAMOND POWDERS are accurately graded in sizes from number 1 to number 6.

WRITE FOR FURTHER INFORMATION AND PRICE QUOTATIONS

★ J. K. SMIT AND SONS, INC. ★
157 Chambers Street, New York
DETROIT WEST HARTFORD PITTSBURGH SEATTLE

Standard Swagers

Available in a complete range of sizes for handling solid stock from ⅛" to 3¾" diameter!

Widely used for every need from pointing wire ends to swaging connections to cable, conduit and hose.

What is your swaging job?

Write for 20 page Catalog SM.

IT'S STANDARD PRACTICE
MACHINERY COMPANY
PROVIDENCE, RHODE ISLAND

To Wind and Ship Your Cable Wire—

CLARK ALL-METAL SPOOLS. Suited to Insulated Wire, Solder, and similar products.

A spool designed for rigid and permanent assembly in your plant; Ends and Traverses shipped unassembled. One simple operation on a hand or power press (with assembling die which we can furnish) makes a durable winding and shipping spool. The material is cold rolled steel in gauges to meet your demands for strength. All edges curled. All parts lithographed to protect the metal and for display of your design and copy.

Made in 5", 6½", and 10½" diameter Ends; Traverses in 1 15/16" diameter (or special 3½" diameter for 10½" End), in any desired length.

We will gladly send samples and prices at your request.

★

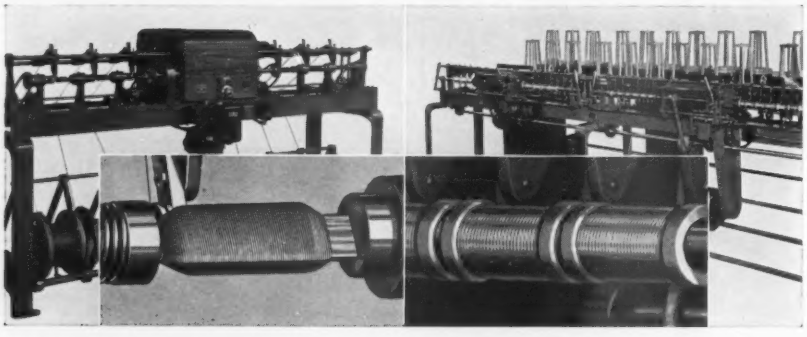
J. L. CLARK MANUFACTURING CO.

500 23rd Avenue
ROCKFORD, ILLINOIS

★

901 Chrysler Building
NEW YORK, NEW YORK

WIRE SPOOLING MACHINES



On Sticks or Spools . . . from Reels or Coils

Typical of FIDELITY Spooling Machines that you find serving every spooling-operation need of wire industry, these two new types command attention to advanced achievements in precision winding of the wire onto little flat sticks or conventional spools, at new high production rates and new low spooling cost.

You'll be interested especially in the new FIDELITY hydraulic control which eliminates gear changes . . . so write for Bulletin #61.

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FIDELITY MACHINE COMPANY

3908-18 FRANKFORD AVENUE, PHILADELPHIA, PA.

New Automatic Welding Gantry

(*Continued from Page 773*)

welding arcs; two welding transformers and control, with switches and meters. On this leg also is mounted an air-filtering unit which, by means of suction nozzles placed at the welding heads, removes the welding smoke and makes for more healthful working conditions.

✦ ✦ ✦

PROVISION has been made for easily connecting-in hand welding equipment to make use of the welding transformers during periods when there is no work requiring automatic welding, or for places where hand welding is desirable.

✦ ✦ ✦

THE gantry is of the rigid all-welded steel construction and is provided with roller bearings throughout. It travels on two rails, one located on the wall and the other set in the floor. The travel motor drives wheels on both rails and thus assures even straight-line travel and eliminates possibility of crane skewing action.

✦ ✦ ✦

THE photograph shows a girder for a 150-ton capacity crane being welded. This girder weighs 90,200 pounds and has a span of 105′-0″. Plates used for this girder range in thickness from $\frac{7}{16}$″ to 1¼″.

✦ ✦ ✦

Bristol's Hex Socket Screws Described in New Folder

THE Bristol Company has prepared a new pocket sized folder of 10 pages describing the Bristol line of Hex Socket Screws which include set screws, socket head cap screws, socket head stripper bolts, pipe plugs, tee keys and screw driver type keys.

✦ ✦ ✦

THE folder illustrates the various styles and gives detailed data on sizes, dimensions, prices, and miscellaneous information.

✦ ✦ ✦

COPIES of this folder, No. 845, may be obtained from the Bristol Company, Waterbury, Conn., upon request.

Supply Priorities and Allocations Board

(*Continued from Page 772*)

thereafter the situation in regard to steel plate became bad, and shortages were met in nickel steel and in high speed tool steel. In May, shortages of alloy steel caused some delay in aircraft production.

✦ ✦ ✦

ON May 1, **OPM** issued General Metals Order No. 1, designed to prevent undue increases in inventories and requiring consumers of steel to state whether their inventories were normal. On May 29 was issued the General Steel Preference Delivery Order, which gave first call on steel products to defense and more essential civilian orders.

✦ ✦ ✦

AS the situation continued difficult, on August 10, OPM issued General Order M-21, which put steel in all its forms, including alloy steel, under full priority control. This was followed on September 4 by the extension of priority treatment to steel warehouses, and on September 16 by an amendment to General Order M-21, which provided full priority control for all steel products.

✦ ✦ ✦

ON October 2, SPAB recommended to OPM an expansion of 10 million tons in the annual ingot-producing capacity of the nation's steel industry.

✦ ✦ ✦

THIS step was taken following an extensive study of the steel situation by OPM. A report on the question of steel expansion was presented to **William S. Knudsen,** Director General of OPM, by **William S. Hauck;** SPAB's approval of the 10-million-ton expansion proposal came after Mr. Knudsen had urged that such action be taken.

✦ ✦ ✦

THE Hauck report revealed that the aggregate demand for steel products currently exceeded the ability of the industry to produce steel, and showed that the rate at which this deficit in supply was growing exceeded the rate of construction of new capacity. It showed, further, that steel orders

(*Please turn to Page 778*)

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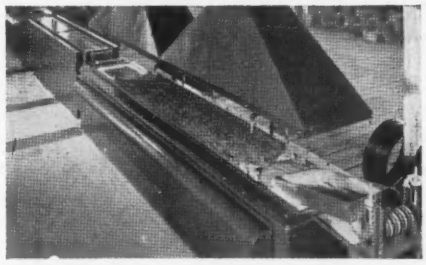

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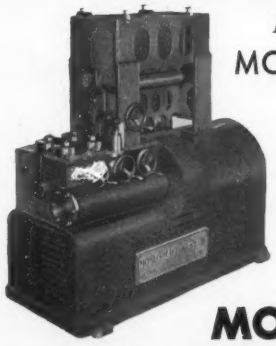

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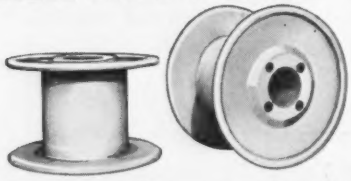

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Vascoloy-Ramet Issues Completely Revised General Catalog

THE Vascoloy-Ramet Corporation of North Chicago, Illinois, has just issued a completely revised general catalog of Vascoloy-Ramet tantalum — tungsten carbide tools and blanks.

✦ ✦ ✦

THIS is a new catalog listing twenty-two typical styles of Vascoloy-Ramet single point tools, together with a grade selector chart giving recommended uses for the various grades of Vascoloy-Ramet. Included are instructions for ordering tools and blanks, also tables for computing costs of standard tools and blanks and special blanks.

✦ ✦ ✦

THE technical information contained in this catalog can be utilized to advantage by all users of dies and tools and a copy may be obtained by addressing Dept. W., Vascoloy-Ramet Corporation, No. Chicago, Ill., or WIRE & WIRE PRODUCTS, 300 Main St., Stamford, Conn.

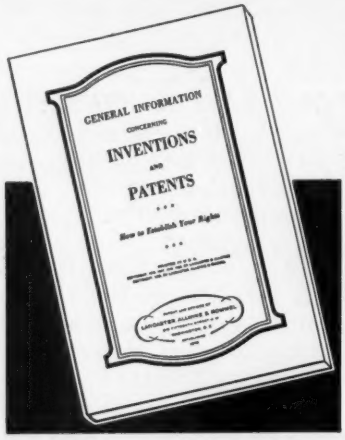
✦ ✦ ✦

Suggest New Specifications For Tracer Bullets

"STEEL FACTS" reports that a company with an order for tracer bullets was making them from a fine grained steel, in which over 3 pounds of aluminum were used per ton of steel produced in order to produce the small grain size specified. The steel producer suggested using a steel with a somewhat coarser grain, and the tracer bullets proved to be just as good as those made from the fine-grained steel.

✦ ✦ ✦

THE reasons the steel company suggested the change were, first, that almost 3 pounds of valuable aluminum could be saved per ton of steel made, second, that the coarser grained steel could be produced more quickly, and third, that each heat of steel would yield a higher precentage of useable finished products. A case where experience directly benefited defense production.



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Firthite Publishes New Users Handbook

A NEW and very complete handbook describing the nature and uses of Firthite has just been issued by the **Firth-Sterling Steel Company.**

✦ ✦ ✦

THE booklet is divided into five sections and the information contained is readily accessible.

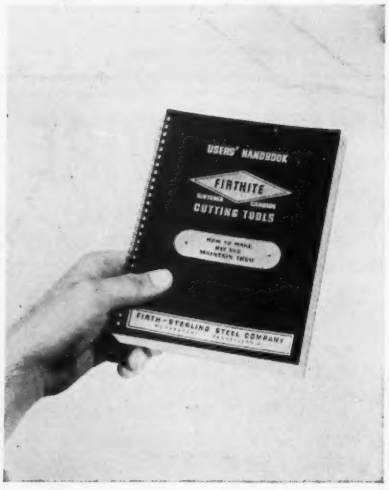
Section 1 describes the nature and uses, adaptability, forms available, grade selection, grades available, and properties and uses.

Section 2 describes general purpose tools showing styles and grades, adapted uses, and specifications.

Section 3 gives a general description of the four steps of forming, recessing, brazing and grinding in making Firthite tools.

Section 4 contains operating suggestions on how to use and maintain the tools while Section 5 is a data section containing a Rockwell Hardness Conversion Chart, Decimal Equivalents, Metal Conversions, Speeds and Feeds Chart, Cutting Speed Conversion Table and Recommended Symbols.

✦ ✦ ✦



A COPY of the booklet may be obtained by addressing the Firth-Sterling Steel Company, McKeesport, Pa., Dept. W., or from WIRE & WIRE PRODUCTS.

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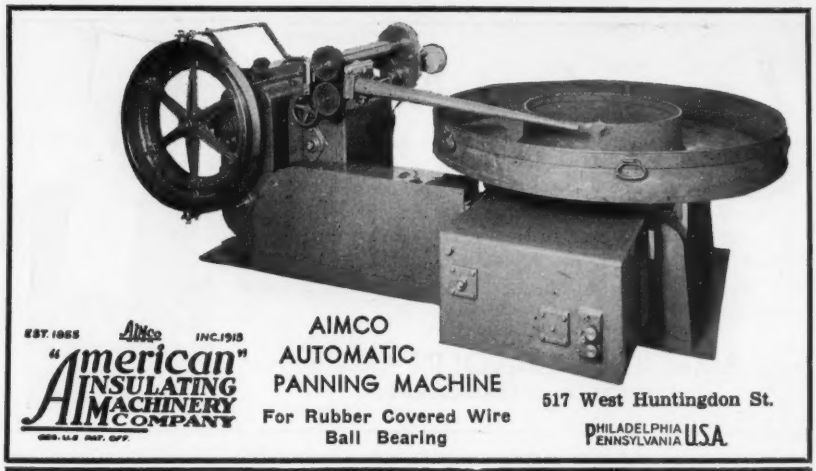
Regarding
The Wire Association
Address
Richard E. Brown, Secretary
Stamford Trust Co. Bldg.
300 Main St. Stamford, Conn.



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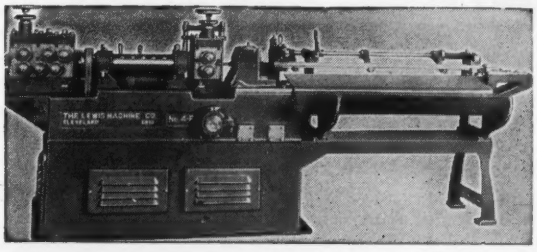

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Write for further information. We may be able to solve your difficulties.

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WIRE DRAWING LUBRICANTS
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William Kneller, Owner

Supply Priorities and Allocations Board

(*Continued from Page 775*)

bearing A-1 to A-10 ratings had risen from 45 per cent of total production in July to 57 percent of total production in September—which, of course, meant that the amount available for civilian use was steadily decreasing.

✦ ✦ ✦

STUDIES prepared by the OPM Bureau of Research and Statistics indicated that during 1942 total steel production would be in the neighborhood of 89 million ingot tons. Defense orders for November are being received at a rate of 60 percent of production. It is estimated that if there were no restrictions on supply, civilian orders would call for 86 million tons—a large increase over civilian consumption in recent years, due to the rise in national income incident to the defense program. A schedule of restricted civilian requirements was drawn up, indicating that on a restricted basis the civilian economy would need approximately 58 million tons of steel. Consequently, a shortage of steel even with civilian requirements restricted is indicated.

✦ ✦ ✦

STEPS were taken by OPM to reduce drastically the amount of steel flowing to civilian uses. A cut in automobile production, reducing that industry's requirements for steel by 50 percent for the 1942 model year, was ordered, and reduction programs were set up for mechanical refrigerators and for washing and ironing machines. Simultaneously, SPAB ruled that steel plate could not be used to build a pipe line from the Texas oil area to New York, and laid down a policy sharply limiting building construction to defense and essential civilian uses.

✦ ✦ ✦

Colombia

MACHINERY costing approximately $230,000 has been ordered from the United States for the new steel mill at Medellin. Production is expected to start within a few months, say press reports.

STEEL WIRE
By MAURICE BONZEL

✦ ✦ ✦

Translated and Published by

Kenneth B. Lewis
Consulting Engineer

✦ ✦ ✦

Price $15.00

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495 pages—414 illustrations

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Wire Machinery Builders Association Announces Election of Officers

THE Wire Machinery Builders Association recently held their annual meeting at Philadelphia, Pa., and the following officers were elected:

President: P. M. Morgan, Morgan Construction Company, Worcester, Mass.

Vice-President: L. A. Vaughn, President, Vaughn Machinery Company, Cuyahoga Falls, Ohio.

Vice-President: E. F. Shuster, F. B. Shuster Company, New Haven, Conn.

Secretary and Treasurer: F. S. Van Valkenburg, Waterbury-Farrel Fdry. & Machine Co., Waterbury, Conn.

✦ ✦ ✦

THE following executive committee was also elected:

P. M. Morgan, Chairman — Morgan Construction Company, Worcester, Mass.

E. F. Shuster, F. B. Shuster Company, New Haven, Conn.

L. A. Vaughn, Vaughn Machinery Company, Cuyahoga Falls, Ohio.

E. J. Scudder, E. J. Scudder Fdry. & Mach. Co., Trenton, N. J.

F. S. VanValkenburg, Waterbury-Farrel Fdry. & Machine Co., Waterbury, Conn.

✦ ✦ ✦

MR. P. M. MORGAN was designated as representative to MAPI.

✦ ✦ ✦

Wickwire Spencer Rejects Republic Steel Offer

DIRECTORS of the Wickwire Spencer Steel Company voted against recommending to stockholders the acceptance of an offer of Republic Steel Corporation to pay $16 cash for the outstanding Wickwire stock and to assume the outstanding indebtedness of Wickwire.

✦ ✦ ✦

DIRECTORS explained that the Republic offer gave Wickwire only 17 cents on the dollar for its plants, which are carried at more than $10,000,000 on the books after depreciation and amortization of more than $14,000,000.

✦ ✦ ✦

IT was pointed out that Wickwire has quick assets $1,556,236 greater than the $7,349,062 lump sum offered by Republic.

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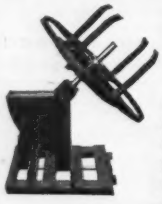

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New Steel Works Under Construction in South Africa

THE South African Iron and Steel Industrial Corporation (Iscor) has announced that work has begun on a large steel works near Vereeniging, about 36 miles south of Johannesburg.

✦ ✦ ✦

PLANS contemplate the erection of a complete steel plant, including blast furnaces, coke ovens, and rolling mills. Because of urgent demand for plant, however, it is expected that the plate mill, annual capacity 100,000 tons, will first be erected. At the start, steel will be brought from the Iscor Works at Pretoria, where the annual output of steel ingots is now about 600,000 tons.

✦ ✦ ✦

THE cost of the plant is estimated at well over £10,000,000, while employment will be given to nearly 10,000 men.

✦ ✦ ✦

THE plant will occupy a site on several thousand acres, with a frontage of 5½ miles along the Vaal River. Space has been provided to house ultimately a plant with a yearly output of 2,000,000 tons, but this figure will not be reached for some time. Anticipated initial output is not expected to exceed 1,000,000 tons, or approximately three times what South Africa turned out before the present emergency.

✦ ✦ ✦

OUTPUT of 1,000,000 tons a year combined with present production of Iscor at Pretoria should be sufficient to meet South Africa's normal requirements.

✦ ✦ ✦

Venezuela

PRELIMINARY work on exploitation of the iron mines of El Pao (Imataca), State of Bolivar, owned by the Iron Mines of Venezuela, is progressing, with construction of the railroad and motor roads already under way and the study of navigation on the Orinoco River concluded.

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6—Lewis Welding Wire S & C Machines M. D.
2—Shuster Shaped Wire S & C Machines ½" & ¾" Square, Hexagon & Round Stock
8—Shuster Round Wire S & C Machines 1/32"-½"

Wanted: Tack Making Machinery. All Sizes.

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for the Wire and Wire Products Industry

New Continuous Extruding Machines for Thermoplastics

TO aid National Defense production of aircraft and Navy wire and cable, National-Erie Corporation, Erie, Pennsylvania, announces new large capacity continuous extruding machines for thermoplastics compounds. The new units are available with plasticizing cylinders from 3½ to 12" diameter and equipped with corrosion resisting linings of extraordinary hardness. Cylinders are completely jacketed for high temperature operation, and are skillfully baffled to provide "progressive heating" of the material passing through the processing chamber. Periphery of stock screws, specially developed by National Erie engineers for plastics, are protected against wear by the application of a new hard surfacing alloy which does not check or crack when subjected to wide

variations in temperature. Improved axial type extruding heads suitable for tubes or straight extruding of miscellaneous commercial shapes are standard equipment on all National Erie extruders. For insulating service there is a choice of screwed, bolted or hinged crossfeed head constructions with adequate provisions for cleaning and adjustment and maintenance of precision settings required on this type of operation. Machines are driven through enclosed transmissions with all gearing straddle mounted between heavy duty roller bearings and automatically lubricated.

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1918 N. Bullum St. Milwaukee, Wis.
176 Eddy Street Providence, R.I.

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WHERE TO BUY

For more complete information, consult the annual Wire and Wire Products Directory, Index & Buyers' Guide.

ABRASIVES—
Norton Co., Worcester, Mass.

ACCUMULATORS—
Farrel-Birmingham Co., Inc., Ansonia, Conn.

AIR DRAW FURNACES—
Carl-Mayer Corp., The, Cleveland, Ohio.

ANNEALING MACHINES—Open Flame
Syncro Machine Co., Rahway, N. J.

ANNEALING POTS AND BOXES—
National Annealing Box Co., Washington, Penna.
Scudder, E. J., Foundry & Machine Co., Trenton, N. J.

ANODES—Nickel
Seymour Mfg. Co., Seymour, Conn.

ARMORING EQUIPMENT—
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.
Watson Machine Co., Paterson, N. J.

AUTOMATIC SPARK TESTING EQUIPMENT—
Entwistle, James L., Pawtucket, R. I.

BAKERS—Hi-Speed
Carl-Mayer Corp., The, Cleveland, Ohio.

BAKERS—Rod and Wire
Carl-Mayer Corp., The, Cleveland, Ohio.
Morgan Construction Co., Worcester, Mass.
Moslo Machinery, Inc., Cleveland, O.
Ross, J. O., Engineering Corp., New York, N. Y.

BANBURY MIXERS—
Farrel-Birmingham Co., Inc., Ansonia, Conn.

BERYLLIUM COPPER — Strip and Bars
Callite Tungsten Corp., Union City, N. J.

BLOCKERS—
Farrel-Birmingham Co., Inc., Ansonia, Conn.

BOBBINS—Braider and Wire Weaving
Apco Mossberg Co., Attleboro, Mass.
Clark, J. L., Mfg. Co., Rockford, Ill.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.

BORON CARBIDE—
Norton Co., Worcester, Mass.

BORTZ—Diamond
Smit, J. K., & Sons, Inc., New York, N. Y.

BRICKS—Acid Proof
Keagler Brick Co., Steubenville, Ohio.

CALIPERS—Roll
Farrel-Birmingham Co., Inc., Ansonia, Conn.

CARRIERS—Braider, High Speed
Apco Mossberg Co., Attleboro, Mass.
Mossberg Pressed Steel Corp., Attleboro, Mass.

CASTINGS—Wire Mill
Farrel-Birmingham Co., Inc., Ansonia, Conn.

CEMENTS—Refractory
Norton Co., Worcester, Mass.

CHEMICALS—Cleaning
American Chemical Paint Co., Ambler, Pa.
Oakite Products, Inc., New York, N. Y.
Standard Industrial Compounds Co., Chicago, Ill.

CLEANERS—Hand and Metal
Oakite Products, Inc., New York, N. Y.
Standard Industrial Compounds Co., Chicago, Ill.

CLEANING & PICKLING EQUIPMENT—
Broden Construction Co., Cleveland, O.
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, Ohio.
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

CLOTH TESTERS—
Scott, Henry L., Co., Providence, R. I.

CLOTH—Wire, All Metals
Callite Tungsten Corp., Union City, N. J.

COATING—Protective
American Lanolin Corp., Lawrence, Mass.

COILERS—Sheet, Strip and Wire
Broden Construction Co., Cleveland, O.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Ruesch, H. J., Machine Co., Newark, N. J.

COILERS AND SPOOLERS FOR INSULATED WIRES—
Entwistle, James L., Pawtucket, R. I.

COLD HEADERS—
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

WHERE TO BUY, Continued

COMPOUNDS—Coppering
American Chemical Paint Co., Ambler, Pa.

COMPOUNDS—Wire Drawing
Oakite Products, Inc., New York, N. Y.
Standard Industrial Compounds Co., Chicago, Ill.

COPHOLDERS—Steel
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.

CRANES—Wire Mill
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, Ohio.
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

CUSTOM WIRE DRAWING—
Hy-Carbo Steel Co., Lowell, Mass.

CUTTING TOOLS—Carbide
Carboloy Co., Inc., Detroit, Mich.
Firth-Sterling Steel Co., McKeesport, Pa.
Vascoloy-Ramet Corp., North Chicago, Ill.

DIAMONDS—Industrial
Callite Tungsten Corp., Union City, N. J.

DIAMOND POWDERS—
Rusch Wire Die Corp., New York, N. Y.
Smit, J. K., & Sons, Inc., New York, N. Y.

DIAMOND TOOLS—
Rusch Wire Die Corp., New York, N. Y.

DIES—Diamond
Cochaud Wire Die Corp., New York, N. Y.
Fort Wayne Wire Die, Inc., Fort Wayne, Ind.
Indiana Wire Die Co., Fort Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
Krause, F., & Co., Inc., Jersey City, N. J.
Rusch Wire Die Corp., New York, N. Y.
Vianney Wire Die Works, New York, N. Y.
Wayne Wire Die Co., Jersey City, N. J.

DIES—Lead Extrusion
Robertson, John, Co., Brooklyn, N. Y.

DIES—Repairs & Re-Cutting
Carboloy Co., Inc., Detroit, Mich.
Cochaud Wire Die Corp., New York, N. Y.
Firth-Sterling Steel Co., McKeesport, Pa.
Fort Wayne Wire Die, Inc., Fort Wayne, Indiana
Kelly Wire Die Corp., New York, N. Y.
Krause, F., & Co., Inc., Jersey City, N. J.
Rusch Wire Die Corp., New York, N. Y.
Vascoloy-Ramet Corp., North Chicago, Ill.
Vianney Wire Die Works, New York, N. Y.
Wayne Wire Die Co., Jersey City, N. J.
Willey's Carbide Tool Co., Detroit, Mich.

DIES—Rod and Tube Drawing
Carboloy Co., Inc., Detroit, Mich.
Firth-Sterling Steel Co., McKeesport, Pa.
Kelly Wire Die Corp., New York, N. Y.
Rusch Wire Die Corp., New York, N. Y.
Tungstan Electric Corp., Union City, N. J.
Vascoloy-Ramet Corp., North Chicago, Ill.
Vianney Wire Die Works, New York, N. Y.
Willey's Carbide Tool Co., Detroit, Mich.

DIES—Tantalum Carbide
Carboloy Co., Inc., Detroit, Mich.
Firth-Sterling Steel Co., McKeesport, Pa.
Kelly Wire Die Corp., New York, N. Y.
Rusch Wire Die Corp., New York, N. Y.
Vascoloy-Ramet Corp., North Chicago, Ill.
Vianney Wire Die Works, New York, N. Y.
Willey's Carbide Tool Co., Detroit, Mich.

DIES—Tungsten Carbide
Carboloy Co., Inc., Detroit, Mich.
Firth-Sterling Steel Co., McKeesport, Pa.
Kelly Wire Die Corp., New York, N. Y.
Rusch Wire Die Corp., New York, N. Y.
Tungsten Electric Corp., Union City, N. J.
Vascoloy-Ramet Corp., North Chicago, Ill.
Vianney Wire Die Works, New York, N. Y.
Willey's Carbide Tool Co., Detroit, Mich.

DIRECT ELECTRIC RESISTANCE HEAT TREATING
Trauwood Engineering Co., Cleveland, Ohio

DRAW BENCHES—
Ruesch, H. J., Machine Co., Newark, N. J.
Scudder, E. J., Foundry & Machine Co., Trenton, N. J.
Standard Machinery Co., Providence, R. I.
Vaughn Machinery Co., Cuyahoga Falls, O.

DRUMS—Flange Steel
Stevens Metal Products Co., Niles, O.

DRUMS—Vulcanizing
Mossberg Pressed Steel Corp., Attleboro, Mass.

ENGINEERS—Consulting Wire Mill
Hartley, George D., Worcester, Mass.
Lewis, Kenneth B., Worcester, Mass.

EQUIPMENT—Insulation Testing
Davis, R. L., Electric Co., Wallingford, Conn.
Entwistle, James L., Pawtucket, R. I.

EYELETS—Brass or Zinc
Platt Bros. & Co., The, Waterbury, Conn.

FLASH BAKER—
Carl-Mayer Corp., The, Cleveland, Ohio.

FLUXES—Soldering
American Chemical Paint Co., Ambler, Pa.

FOAM PRODUCING COMPOUNDS—
American Chemical Paint Co., Ambler, Pa.

FURNACES—Annealing
Carl-Mayer Corp., The, Cleveland, Ohio.
Electric Furnace Co., Salem, O.
Surface Combustion Corp., Toledo, Ohio.
Trauwood Engineering Co., Cleveland, Ohio

FURNACES—Automatic
Carl-Mayer Corp., The, Cleveland, Ohio.
Electric Furnace Co., Salem, O.
Surface Combustion Corp., Toledo, Ohio.

FURNACES—Brazing
Electric Furnace Co., Salem, O.
Firth-Sterling Steel Co., McKeesport, Pa.

FURNACES—Bright Annealing
Electric Furnace Co., Salem, O.
Surface Combustion Corp., Toledo, Ohio.

FURNACES—Electric
Electric Furnace Co., Salem, O.
Surface Combustion Corp., Toledo, Ohio.
Trauwood Engineering Co., Cleveland, Ohio

FURNACES—Hardening and Tempering
Carl-Mayer Corp., The, Cleveland, Ohio.
Electric Furnace Co., Salem, O.
Surface Combustion Corp., Toledo, Ohio.
Trauwood Engineering Co., Cleveland, Ohio

FURNACES—Lead Melting
Electric Furnace Co., Salem, O.
Robertson, John, Co., Brooklyn, N. Y.
Surface Combustion Corp., Toledo, Ohio.

FURNACES—Non-Oxidizing
Carl-Mayer Corp., The, Cleveland, Ohio.
Electric Furnace Co., Salem, O.
Surface Combustion Corp., Toledo, Ohio.

FURNACES—Normalizing
Carl-Mayer Corp., The, Cleveland, Ohio.
Electric Furnace Co., Salem, O.
Surface Combustion Corp., Toledo, Ohio.

FURNACES—Salt Bath
Electric Furnace Co., Salem, O.
Surface Combustion Corp., Toledo, Ohio.

FURNACES—Wire, Strip & Sheet
Carl-Mayer Corp., The, Cleveland, Ohio.
Electric Furnace Co., Salem, O.
Surface Combustion Corp., Toledo, Ohio.

GALVANIZING KETTLES—
National Annealing Box Co., Washington, Penna.

GATES—Blast, For Low Pressure Air
Farrel-Birmingham Co., Inc., Ansonia, Conn.

GEARS—Continuous Tooth Herringbone
Farrel-Birmingham Co., Inc., Ansonia, Conn.

GEARS—Wire Mill
Farrel-Birmingham Co., Inc., Ansonia, Conn.

GRINDERS—Roll
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Norton Co., Worcester, Mass.

HI-SPEED BAKERS—
Carl-Mayer Corp., The, Cleveland, Ohio.

HOISTS—Electric Travelling
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, Ohio.

INHIBITORS—
American Chemical Paint Co., Ambler, Pa.

INSTRUMENTS—Electrical
Entwistle, James L., Pawtucket, R. I.

KETTLES — Galvanizing, Annealing, Tinning, etc.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
National Annealing Box Co., Washington, Pa.

LATHES—Die Reaming
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

LUBRICANTS—For Metal Cutting Stamping and Drawing
Standard Industrial Compounds Co., Chicago, Ill.

LUBRICANTS—Wire Drawing
Oakite Products, Inc., New York, N. Y.
Standard Industrial Compounds Co., Chicago, Ill.

MACHINERY — Armoring (Cable, Wire Hose)
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Robertson, John, Co., Brooklyn, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.
Thomson-Judd Wire Machinery Co., Sub. of Thomson-Gibb Electric Welding Co., Lynn, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Braiding
Fidelity Machine Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Brazing
Thomson-Judd Wire Machinery Co., Sub. of Thomson-Gibb Electric Welding Co., Lynn, Mass.

MACHINERY—Bunching
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Bundling, Scrap
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.
Watson Machine Co., Paterson, N. J.

MACHINERY—Cable, Electric
American Insulating Mach'y Co., Phila., Pa.
Entwistle, James L., Pawtucket, R. I.
Fidelity Machine Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Syncro Machine Co., Rahway, N. J.
Thomson-Judd Wire Machinery Co., Sub. of Thomson-Gibb Electric Welding Co., Lynn, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Chain Making
Nilson, A. H., Machine Co., The, Bridgeport, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Closing
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Coil Winding
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.

MACHINERY—Coilers
Broden Construction Co., Cleveland, O.
Entwistle, James L., Pawtucket, R. I.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Morgan Construction Co., Worcester, Mass.
New England Butt Co., Providence, R. I.
Ruesch, H. J., Machine Co., Newark, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.
Watson Machine Co., Paterson, N. J.

MACHINERY—Copper Wire Drawing and Rolling
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Ruesch, H. J., Machine Co., Newark, N. J.
Syncro Machine Co., Rahway, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Covering Wire
Fidelity Machine Co., Philadelphia, Pa.
Syncro Machine Co., Rahway, N. J.

MACHINERY—Cutting
Broden Construction Co., Cleveland, O.
Hallden Machine Co., Thomaston, Conn.
Lewis Machine Co., The, Cleveland, O.
Moslo Machinery, Inc., Cleveland, O.
National Machinery Exchange (Used), New York, N. Y.
Nilson, A. H., Machine Co., The, Bridgeport, Conn.
Shuster, F. B., Co., New Haven, Conn.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.

MACHINERY—Die Making
Firth-Sterling Steel Co., McKeesport, Pa.

MACHINERY—Draw Benches
Standard Machinery Co., Providence, R. I.

MACHINERY—Edging
Standard Machinery Co., Providence, R. I.

WHERE TO BUY, Continued

MACHINERY—Enameling
American Insulating Mach'y Co., Phila., Pa.
Syncro Machine Co., Rahway, N. J.

MACHINERY—Extruding
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Robertson, John, Co., Brooklyn, N. Y.
Royle, John, & Sons, Paterson, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Flat Wire
Broden Construction Co., Cleveland, O.
Ruesch, H. J., Machine Co., Newark, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Forming
National Machinery Exchange (Used), New York, N. Y.
Nilson, A. H., Machine Co., The, Bridgeport, Conn.
Sleeper & Hartley, Inc., Worcester, Mass.
Standard Machinery Co., Providence, R. I.

MACHINERY—Galvanizing Wire
Broden Construction Co., Cleveland, O.
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Gang Winders
Fidelity Machine Co., Philadelphia, Pa.
Ruesch, H. J., Machine Co., Newark, N. J.
Syncro Machine Co., Rahway, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Grinding
Norton Co., Worcester, Mass.

MACHINERY—Grinding, Roll
Farrel-Birmingham Co., Inc., Ansonia, Conn.

MACHINERY—Insulating
American Insulating Mach'y Co., Phila., Pa.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Fidelity Machine Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Royle, John, & Sons, Paterson, N. J.
Syncro Machine Co., Rahway, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Knitting
Fidelity Machine Co., Philadelphia, Pa.

MACHINERY—Lead Encasing
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Robertson, John, Co., Brooklyn, N. Y.

MACHINERY—Lead Stripping
Robertson, John, Co., Brooklyn, N. Y.
Watson Machine Co., Paterson, N. J.

MACHINERY—Lock Washer
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Magnet Wire
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.

MACHINERY—Material Handling
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, Ohio.

MACHINERY — Measuring Wire & Cable
Davis, R. L., Electric Co., Wallingford, Conn.
Durant Mfg. Co., Milwaukee, Wis.
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Nail and Tack
Glader, Wm., Machine Works, Chicago, Ill.
National Machinery Exchange (Used), New York, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Panning
American Insulating Mach'y Co., Phila., Pa.
Syncro Machine Co., Rahway, N. J.

MACHINERY—Paper Covering Wire
Terkelsen Machine Co., Boston, Mass.

MACHINERY—Pointing
Broden Construction Co., Cleveland, O.
Ruesch, H. J., Machine Co., Newark, N. J.
Scudder, E. J., Foundry & Machine Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Standard Machinery Co., Providence, R. I.
Syncro Machine Co., Rahway, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Rod Mill
Broden Construction Co., Cleveland, O.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Morgan Construction Co., Worcester, Mass.
Ruesch, H. J., Machine Co., Newark, N. J.

MACHINERY—Rolling Mill
Broden Construction Co., Cleveland, O.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Morgan Construction Co., Worcester, Mass.
National Machinery Exchange (Used), New York, N. Y.
Ruesch, H. J., Machine Co., Newark, N. J.
Standard Machinery Co., Providence, R. I.
Syncro Machine Co., Rahway, N. J.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Rubber for Insulating Wire
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Royle, John, & Sons, Paterson, N. J.

MACHINERY—Rubber Strip Covering
Farrel-Birmingham Co., Inc., Ansonia, Conn.
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Rubber Tubing and Straining
Farrel-Birmingham Co., Inc., Ansonia, Conn.
New England Butt Co., Providence, R. I.
Royle, John, & Sons, Paterson, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Screw Wire
National Machinery Exchange (Used), New York, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Special
American Insulating Mach'y Co., Phila., Pa.
Broden Construction Co., Cleveland, O.
Emory, Robert J., Co., Newark, N. J.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
New England Butt Co., Providence, R. I.
Ruesch, H. J., Machine Co., Newark, N. J.
Scudder, E. J., Foundry & Machine Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Standard Machinery Co., Providence, R. I. (Special Designs)
Syncro Machine Co., Rahway, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Spooling
American Insulating Mach'y Co., Phila., Pa.
Emory, Robert J., Co., Newark, N. J.
Fidelity Machine Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.
Watson Machine Co., Paterson, N. J.

MACHINERY—Spring Making
National Machinery Exchange (Used), New York, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Staple
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Straightening
Broden Construction Co., Cleveland, O.
Hallden Machine Co., Thomaston, Conn.
Lewis Machine Co., The, Cleveland, O.
Moslo Machinery, Inc., Cleveland, O.
National Machinery Exchange (Used), New York, N. Y.
Nilson, A. H., Machine Co., The, Bridgeport, Conn.
Ruesch, H. J., Machine Co., Newark, N. J.
Shuster, F. B., Co., New Haven, Conn.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Stranding
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Thomson-Judd Wire Machinery Co., Sub. of Thomson-Gibb Electric Welding Co., Lynn, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Strip Steel
Broden Construction Co., Cleveland, O.
Ruesch, H. J., Machine Co., Newark, N. J.

Machinery—Swaging
National Machinery Exchange (Used), New York, N. Y.
Ruesch, H. J., Machine Co., Newark, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Standard Machinery Co., Providence, R. I.
Syncro Machine Co., Rahway, N. J.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Taping
American Insulating Mach'y Co., Phila., Pa.
Fidelity Machine Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Syncro Machine Co., Rahway, N. J.
Thomson-Judd Wire Machinery Co., Sub. of Thomson-Gibb Electric Welding Co., Lynn, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Testing
Entwistle, James L., Pawtucket, R. I.
Scott, Henry L., Co., Providence, R. I.

MACHINERY—Testing Size of Wire
Davis, R. L., Electric Co., Wallingford, Conn.

MACHINERY—Testing—Spring
Standard Machinery Co., Providence, R. I.

MACHINERY—Tinsel Rolling Mills
American Insulating Mach'y. Co., Phila., Pa.
Syncro Machine Co., Rahway, N. J.

MACHINERY—Trolley Wire
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Tube Mill
Ruesch, H. J., Machine Co., Newark, N. J.

MACHINERY—Welding Wire
Micro Products Co., Chicago, Ill.
Shuster, F. B., Co., New Haven, Conn.
Thomson-Judd Wire Machinery Co., Sub. of Thomson-Gibb Electric Welding Co., Lynn, Mass.

MACHINERY—Winding
American Insulating Mach'y Co., Phila., Pa.
Entwistle, James L., Pawtucket, R. I.
Fidelity Machine Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Wire Drawing
American Insulating Mach'y Co., Phila., Pa.
Broden Construction Co., Cleveland, O.
Morgan Construction Co., Worcester, Mass.
National Machinery Exchange (Used), New York, N. Y.
Ruesch, H. J., Machine Co., Newark, N. J.
Scudder, E. J., Foundry & Machine Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Standard Machinery Co., Providence, R. I.
Syncro Machine Co., Rahway, N. J.
Thomson-Judd Wire Machinery Co., Sub. of Thomson-Gibb Electric Welding Co., Lynn, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Wire Measuring
Durant Mfg. Co., Milwaukee, Wis.
Watson Machine Co., Paterson, N. J.

MACHINERY—Wire Rope
New England Butt Co., Providence, R. I.
Thomson-Judd Wire Machinery Co., Sub. of Thomson-Gibb Electric Welding Co., Lynn, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Wire Tinning
American Insulating Mach'y. Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Syncro Machine Co., Rahway, N. J.

MACHINERY—Wood Screw
National Machinery Exchange (Used), New York, N. Y.

MACHINERY—Wrapping Wire
Terkelsen Machine Co., Boston, Mass.

MATERIAL HANDLING EQUIPMENT—
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, Ohio.

MILLS—Rod, Bar, etc.
Farrel-Birmingham Co., Inc., Ansonia, Conn.

MILLS—Strip, Hot and Cold For Iron, Steel, Copper, Brass, etc.
Farrel-Birmingham Co., Inc., Ansonia, Conn.

MILLS—Tandem Rolling and Edging
Standard Machinery Co., Providence, R. I.

NICKEL SILVER AND PHOSPHOR BRONZE—Rod, Wire and Strip
Hudson Wire Co., Ossining, N. Y.
Seymour Mfg. Co., Seymour, Conn.

OILS—Wire Drawing
Standard Industrial Compounds Co., Chicago, Ill.

OVENS—Industrial
Carl-Mayer Corp., The, Cleveland, Ohio.
Ross, J. O., Engineering Corp., New York, N. Y.

PANS—Lead and Spelter
National Annealing Box Co., Washington, Penna.

WHERE TO BUY, Continued

PANS—Vulcanizing
Mossberg Pressed Steel Corp., Attleboro, Mass.

PAPER—Creped Wrapping
Crepe-Kraft Co., Inc., Newark, N. J.

PAPER TESTERS—
Scott, Henry L., Co., Providence, R. I.

PATENT ATTORNEYS—
Lancaster, Allwine and Rommel, Washington, D. C.

PICKLING COMPOUNDS—
American Chemical Paint Co., Ambler, Pa.

PICKLING TANK LININGS—
Keagler Brick Co., Steubenville, Ohio.

PLASTIC TESTERS—
Scott, Henry L., Co., Providence, R. I.

POTS—Lead Melting
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Robertson, John, Co., Brooklyn, N. Y.

PRESSES—Hydraulic and Mechanical
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Robertson, John, Co., Brooklyn, N. Y.
Standard Machinery Co., Providence, R. I. (Mechanical Only)

PRESSES—Lead
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Robertson, John, Co., Brooklyn, N. Y.

PRESSURE VESSELS—
National Annealing Box Co., Washington, Penna.

PULLERS—Wire
Scudder, E. J., Foundry & Machine Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.

PUMPS—Hydraulic
Robertson, John, Co., Brooklyn, N. Y.

RECORDERS—Fault and Reel
Entwistle, James L., Pawtucket, R. I.

REEL AND TENSION STAND—
Fidelity Machine Co., Philadelphia, Pa.
Moslo Machinery, Inc., Cleveland, O.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Rahway, N. J.

REEL CRUTCHES—
Watson Machine Co., Paterson, N. J.

REELS—Annealing and Stranding
American Pulley Co., Philadelphia, Pa.
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Moslo Machinery, Inc., Cleveland, O.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Shuster, F. B., Co., New Haven, Conn.
Stevens Metal Products Co., Niles, O.

REELS—Constant Tension
Farrel-Birmingham Co., Inc., Ansonia, Conn.

REELS—Steel
American Pulley Co., Philadelphia, Pa.
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Stevens Metal Products Co., Niles, O.

REELS AND SPOOLS—Shipping and Shop
American Pulley Co., Philadelphia, Pa.
Apco Mossberg Co., Attleboro, Mass.
Clark, J. L., Mfg. Co., Rockford, Ill.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Stevens Metal Products Co., Niles, O.

REELS—Takeoff
American Pulley Co., Philadelphia, Pa.
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Moslo Machinery, Inc., Cleveland, O.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Shuster, F. B., Co., New Haven, Conn.
Stevens Metal Products Co., Niles, O.

REELS—Vulcanizing and Impregnating
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Shuster, F. B., Co., New Haven, Conn.
Stevens Metal Products Co., Niles, O.

REELS—Wire Drawing
Apco Mossberg Co., Attleboro, Mass.
Clark, J. L., Mfg. Co., Rockford, Ill.
Hubbard Spool Co., Chicago, Ill.
Moslo Machinery, Inc., Cleveland, O.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Stevens Metal Products Co., Niles, O.

REFRACTORIES—High Temperature
Norton Co., Worcester, Mass.

ROD BAKERS—
Carl-Mayer Corp., The, Cleveland, Ohio.
Moslo Machinery, Inc., Cleveland, O.
Ross, J. O., Engineering Corp., New York, N. Y.

RODS—Wire—Non-Ferrous
Hudson Wire Co., Ossining, N. Y.
Platt Bros. & Co., The, Waterbury, Conn.
Seymour Mfg. Co., Seymour, Conn.

RODS—Wire—Steel
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Keystone Steel & Wire Co., Peoria, Ill.
Sheffield Steel Corp., Kansas City, Mo.

ROLLS—Iron, Steel, Alloy
Farrel-Birmingham Co., Inc., Ansonia, Conn.

ROLLS—For Strip, Rod, Bar Mills
Farrel-Birmingham Co., Inc., Ansonia, Conn.

ROLL STRAIGHTENERS—
Moslo Machinery, Inc., Cleveland, O.

RUBBER AND RUBBER COMPRESSION TESTERS—
Scott, Henry L., Co., Providence, R. I.

RUST PROOF COMPOUNDS—
American Chemical Paint Co., Ambler, Pa.
American Lanolin Corp., Lawrence, Mass.

SHEET—Steel
Continental Steel Corp., Kokomo, Ind.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.

SOAPS—Industrial and Wire Drawing
Standard Industrial Compounds Co., Chicago, Ill.

SOLDER—
Kester Solder Company, Chicago, Ill.

SPARK TESTING EQUIPMENT—
Entwistle, James L., Pawtucket, R. I.

SPOOLS—Annealing and Wire Drawing
American Pulley Co., Philadelphia, Pa.
Apco Mossberg Co., Attleboro, Mass.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Stevens Metal Products Co., Niles, O.

SPOOLS—Shipping and Shop
American Pulley Co., Philadelphia, Pa.
Apco Mossberg Co., Attleboro, Mass.
Clark, J. L., Mfg. Co., Rockford, Ill.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Stevens Metal Products Co., Niles, O.

SPOOLS—Steel
American Pulley Co., Philadelphia, Pa.
Apco Mossberg Co., Attleboro, Mass.
Clark, J. L., Mfg. Co., Rockford, Ill.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Stevens Metal Products Co., Niles, O.

STAMPINGS—Steel
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.

STRIP—Brass and Non Ferrous
Hudson Wire Co., Ossining, N. Y.
Seymour Mfg. Co., Seymour, Conn.

STRIP—Steel
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Firth-Sterling Steel Co., McKeesport, Pa.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.

STRIP METAL TESTERS—
Scott, Henry L., Co., Providence, R. I.

SWIFTS—Take-off
Apco Mossberg Co., Attleboro, Mass.
Mossberg Pressed Steel Corp., Attleboro, Mass.

TAKE-UPS FOR CABLE, HOSE, LEAD PRESSES AND SHEET RUBBER—
Entwistle, James L., Pawtucket, R. I.

TANK LININGS—Brick
Keagler Brick Co., Steubenville, Ohio.

TANKS—Compound
Watson Machine Co., Paterson, N. J.

TANKS—Steel
Mossberg Pressed Steel Corp., Attleboro, Mass.

TENSILE TESTERS—
Scott, Henry L., Co., Providence, R. I.

TESTING INSTRUMENTS—
Entwistle, James L., Pawtucket, R. I.
Scott, Henry L., Co., Providence, R. I.

TRAMRAIL SYSTEMS—
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, Ohio.

TREADS—Safety
Norton Co., Worcester, Mass.

TRUCKS—
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

TUBE BENDERS AND FORMERS—
Ruesch, H. J., Machine Co., Newark, N. J.

TURKS HEADS—Friction and Power Driven
Standard Machinery Co., Providence, R. I.

VULCANIZERS—
Watson Machine Co., Paterson, N. J.

VULCANIZING PANS—
American Insulating Mach'y. Co., Phila., Pa.
Mossberg Pressed Steel Corp., Attleboro, Mass.

WELDERS—Spot and Butt
Micro Products Co., Chicago, Ill.
Moslo Machinery, Inc., Cleveland, O.

WIRE—Cold Heading
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Keystone Steel & Wire Co., Peoria, Ill.
Sheffield Steel Corp., Kansas City, Mo.

WIRE DRAWING — High Grade Custom
Hy-Carbo Steel Co., Lowell, Mass.

WIRE—Electric
Hudson Wire Co., Ossining, N. Y.
Seymour Mfg. Co., The, Seymour, Conn.

WIRE—Enameled For Coils
Winsted Div. of Hudson Wire Co., Winsted, Conn.

WIRE—Manufacturers
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Firth-Sterling Steel Co., McKeesport, Pa.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Keystone Steel & Wire Co., Peoria, Ill.
Sheffield Steel Corp., Kansas City, Mo.

WIRE—Nickel Silver and Phosphor Bronze
Callite Tungsten Corp., Union City, N. J.
Hudson Wire Co., Ossining, N. Y.
Seymour Mfg. Co., The, Seymour, Conn.

WIRE—Non Ferrous to Specification For Special Purposes
Callite Tungsten Corp., Union City, N. J.
Hudson Wire Co., Ossining, N. Y.
Seymour Mfg. Co., Seymour, Conn.
Winsted Div. of Hudson Wire Co., Winsted, Conn.

WIRE SOLDER—
Kester Solder Company, Chicago, Illinois

WIRE—Spring
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Firth-Sterling Steel Co., McKeesport, Pa.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Keystone Steel & Wire Co., Peoria, Ill.
Seymour Mfg. Co., Seymour, Conn.
Sheffield Steel Corp., Kansas City, Mo.

WIRE—Stainless Steel
Callite Tungsten Corp., Union City, N. J.
Firth-Sterling Steel Co., McKeesport, Pa.

WIRE—Steel—Also Coppered Steel—Also Galvanized Steel
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Keystone Steel & Wire Co., Peoria, Ill.
Sheffield Steel Corp., Kansas City, Mo.

WIRE AND STRIP—Zinc
Platt Bros. & Co., The, Waterbury, Conn.

WIRE TESTERS—
Scott, Henry L., Co., Providence, R. I.

WIRE, WEAVING—Non Ferrous
Hudson Wire Co., Ossining, N. Y.

WRAPPING PAPER—Creped
Crepe-Kraft Co., Inc., Newark, N. J.

YARN TESTERS—
Scott, Henry L., Co., Providence, R. I.

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AUTHORS

Contributing the Leading Articles to WIRE AND WIRE PRODUCTS During the Year, 1941

ADAMS, ROBERT L.,
Barnes-Gibson-Raymond Div.,
Associated Spring Corp.,
Detroit, Michigan

BRILLHART, S. E., Mfg. Engr.,
Rubber Covered Wire Div.,
Western Electric Company,
Point Breeze Works,
Baltimore, Maryland

BROWN, RICHARD E., Editor,
WIRE & WIRE PRODUCTS,
Stamford, Conn.

COPPICK, SYDNEY, Graduate Asst.,
New York State College of Forestry,
Syracuse, New York

CLUVERIUS, REAR ADMIRAL WAT TYLER,
U. S. Navy (Ret.), President,
Worcester Polytechnic Institute,
Worcester, Mass.

ENDICOTT, H. S.,
Works Laboratory,
General Electric Company,
Pittsfield, Mass.

ENGELHARD, CHARLES, President,
Baker & Co., Inc.,
Newark, N. J.

FAZAKERLEY, THOMAS W.,
West Wickham,
Kent, England

FINDLEY, J. K., Sales Met.,
Allegheny Ludlum Steel Corp.,
Dunkirk, New York

GARRETT, C. W., Wire Mill Met.,
Jones & Laughlin Steel Corp.,
Aliquippa Works,
Aliquippa, Penna.

GLEN, A. E.,
Carboloy Co., Inc.,
Detroit, Mich.

GOETZEL, CLAUS G., Ph.D.,
Asst. Dir. of Research,
American Electro Metal Corp.,
Yonkers, New York

GRAGG, DR. CHARLES I., Associate Professor of Marketing, Harvard Graduate School of Business Administration, Chief Consultant to Director of Priorities,
Office of Production Management,
Washington, D. C.

HEMPHILL, R. J., Research Laboratory,
General Electric Company,
Pittsfield, Mass.

HERZ, PAUL L., Tech. Advisor & Mgr.,
Belgian Tool Company,
Malines, Belgium

HOPKINS, H. L., Plant Met. & Supt.,
Plant #2, National Screw & Mfg. Co.,
Cleveland, Ohio

IMHOFF, WALLACE G., Met. Engr.,
Vineland, New Jersey

LEWIS, KENNETH B.,
Consulting Wire Mill Engineer,
Worcester, Mass.

LONGWELL, J. R., Chief Engr.,
Carboloy Company, Inc.,
Detroit, Michigan

MacCORKLE, D. S.,
American Standards Association,
New York, N. Y.

MAY, GEO. S., Chairman of the Board of Trustees,
Geo. S. May Business Foundation,
Chicago, Illinois

McCARTHY, B. L., Ch. Met.,
Wickwire Spencer Steel Co.,
Buffalo, New York

McGAR, BENJ., Asst. Dir. of Res.,
Chase Brass & Copper Co.,
Waterbury, Conn.

MILLER, E. P., Physics Dept.,
Purdue University,
Lafayette, Indiana

MORRAL, F. R., Res. Met.,
Continental Steel Corp.,
Kokomo, Indiana

NEUMAN, DANIEL, B. S., Industrial Fellow,
Mellon Institute of Industrial Research,
Pittsburgh, Pa.

PADOWICZ, H. N., Engr.,
Western Electric Company,
Kearny, New Jersey

PIERCY, C. A., Cable Engr. Dept.,
General Electric Company,
Schenectady, New York

RACE, DR. H. H., Research Lab.,
General Electric Company,
Pittsfield, Mass.

RITCHIE, LT. COL. S. B., U. S. Army,
Ordnance Dept., Director of Res.,
Watertown Arsenal,
Watertown, Mass.

ROCKEFELLER, J. W., JR.,
Consulting Engr.,
New York, N. Y.

ROSS, W. F., Engineer,
Electric Furnace Co.,
Salem, Ohio

SANDELIN, R. W., Ph.D., Met.,
Atlantic Steel Company,
Atlanta, Georgia

SCHULZ, BRIG. GEN. J. W. N., U. S. Army,
Director of Purchases & Contracts,
Office of the Under Secretary,
War Department, Washington, D. C.

STOCKDALE, DR. ALLAN A.,
National Association of Manufacturers,
New York, N. Y.

TATNALL, R. R., Met. Engr.,
Morgan Works,
Wickwire Spencer Steel Co.,
Worcester, Mass.

TITLEY, R. H.,
American Standards Association,
New York, N. Y.

WASHBURN, D. E., Chief Chemist,
Warner Company,
Bellefonte, Penna.

WATT, D. G., Asst. Testing Engr.,
Hydro-Electric Power Commission of Ontario,
Toronto, Ontario, Canada

WEH, J. A., Gen. Engr. Laboratory,
General Electric Co.,
Schenectady, New York

WESTPHAL, F. A., Supt. Wire Mills,
Sheffield Steel Corp.,
Kansas City, Mo.

WHITTEN, J. L., Sales Mgr.,
Lee Wilson Engineering Co.,
Cleveland, Ohio

WILLIAMS, ROBERT C., Chief Chemist,
The Ironsides Company,
Columbus, Ohio

WINKLER, L. H., Met. Engr.,
Bethlehem Steel Co.,
Bethlehem, Pa.

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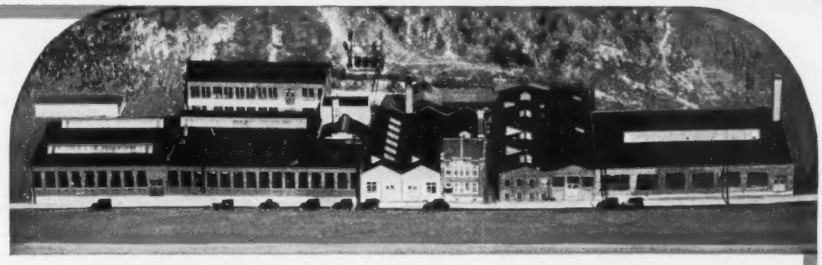

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